

Proposal for a Ph.D. in Music Technology

Purdue School of Engineering and Technology @ IUPUI
Department of Music and Arts Technology

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INSTITUTION: Indiana University Purdue University Indianapolis - IUPUI

SCHOOL: School of Engineering and Technology

DEGREE PROGRAM TITLE: Ph.D. in Music Technology

FORM OF RECOGNITION TO BE AWARDED/DEGREE CODE: Doctor of Philosophy

SUGGESTED CIP CODE: TBD

LOCATION OF PROGRAM/CAMPUS CODE: IUPUI

PROJECTED DATE OF IMPLEMENTATION: August 2015

DATE PROPOSAL WAS APPROVED BY INSTITUTIONAL BOARD OF TRUSTEES:

SIGNATURE OF AUTHORIZING INSTITUTIONAL OFFICER:

DATE:

DATE RECEIVED BY COMMISSION FOR HIGHER EDUCATION:

COMMISSION ACTION

DATE:

Abstract

This document proposes a Ph.D. in Music Technology.

Objectives

Clientele to be served:

Graduates of master's degree programs in music technology, music, computer science, engineering, informatics, human-computer interaction, physics, psychology, education, new media, information science, and other relevant fields.

Curriculum

Credit Hours:

A total of 90 credit hours of graduate study will be required for the doctoral degree. Students entering with a Bachelor's degree will be admitted into the M.S. in Music Technology program and obtain the non-thesis Master's at the end of their second year of study. The 60 credit hours, required of all students, beyond a Master's will consist of:

- 12 hours of required Music and Arts Technology courses:
 - N521, N531: 6 hours
 - Core: 6 hours
 - Seminars: 0 hours
- 12 hours in a Minor Area
- 12 or more hours in electives
- 12 hours, minimum, for dissertation work

The required Music and Arts Technology courses (12 hours) consist of the following: Research Methods in Music and Multimedia (N521) and Quantitative and Qualitative Research in Music (N531). In addition, the following two core courses are required: History of Music Technology and Music Engineering Technology. Students will also be enrolled in the departmental seminar course for the duration of their residency at IUPUI.

Minor (12 hours). All students will take 12 credits in a Minor area formulated and approved as part of their Plan of Study in consultation with their Academic Advisor and the MAT Graduate Coordinator. These hours may be taken in the Department of Music and Arts Technology, other departments in the university, or a combination of courses from different units. Students electing to pursue the degree minor in a separate department or school must qualify according to the admission criteria by the hosting department's graduate studies regulations. The student will solicit an advisor in the Minor's area of scholarship to give guidance, ensure the student's eligibility, appropriate course selections, and participate in preparing qualifying and oral examinations. Outlines of sample 12 credit course offerings for various minors across the university are included in this proposal's appendices.

Electives (12+ hours). Additional elective courses are to be taken from departmental offerings, or outside the department or school. These would be in disciplines supporting the student's dissertation and career focus, such as: computer information technology, electrical and computer engineering, informatics, technology communication and leadership, mechanical engineering, biomedical engineering, and art and design.

Dissertation (12+ hours). The remainder of hours to total 60 will be used for dissertation credits.

Unique or Innovative Features

Music technology is a rapidly evolving field and as such requires an agile curricular format in order to foster innovative dissertation study and research and accommodate new cross-disciplinary developments. This is realized through the individual Ph.D. Plan of Study. This helps to ensure a logical curriculum tailored for each student, sets a clear pathway toward completion of the student's degree, and helps the school plan and monitor the overall graduate program.

Students in the Ph.D. program in Music Technology develop their own Plan of Study, documenting and defining their own unique academic course of study. The degree requirements are formulated with a breadth and depth to afford a sufficient degree of flexibility in developing a Plan of Study that best suits each student's individual needs and goals. All students must formulate and file a preliminary Ph.D. Plan of Study during their first semester to be approved by the MAT Graduate Coordinator. The plan must meet the requirements of the Ph.D. and be appropriate to meet the needs of the student's chosen minor and dissertation area.

Employment Possibilities

It is anticipated that the majority of the Ph.D. candidates will be employed in academia. Depending on the nature of their Ph.D. research graduates may find employment in academic units across a range of disciplines including, but not limited to, departments of music and arts technology, music, performing arts, fine and applied arts, computer science, and informatics.

Music technology is emerging internationally as an academic discipline. In recent years, music technology degree programs have been proliferating throughout the country. Currently more than 60 collegiate institutions offer B.S., B.F.A., B.M. or B.A. degrees in music technology (Phillips, 2013), up from 40 a few years earlier (Phillips, 2009). Emphases in these programs include audio production, music engineering technology, music industry, commercial music, music education, and music composition. In Indiana four undergraduate music technology degrees have been established since 2005.

At the graduate program level, the number of Masters degrees offered is not known specifically. Currently, there are only two Ph.D. programs in music technology in the country (New York University and Georgia Institute of Technology).

Recognition of the growth of music technology produced the first national standards for accreditation in this field at the annual National Association of Schools of Music (NASM) meeting in November of 2012. (NASM is the national accrediting body for collegiate music institutions.)

The U.S. Bureau of Labor Statistics projects a 19% growth in academic job positions, across all fields, from 2012 to 2022. Without providing data specific to Music Technology, the emergent nature of the field indicates growth at or above the average. This coupled with small number of current Ph.Ds. specialized for the field show a favorable job market for graduates.

This Ph.D. proposal builds on the continuing success of the department's Master's program. Graduates from the M.S. in Music Technology program have obtained employment and currently hold positions in the following academic institutions:

Ball State University, Muncie, IN
Berklee College of Music, Boston, MA
Boston University, Boston, MA
Butler University, Indianapolis, IN
Capitol University, Columbus, OH
College Conservatory, University of Cincinnati, OH
Depauw University, Greencastle, IN
Florida Baptist College, Tampa, FL
Indiana State University, Terra Haute, IN
IUPUI (Department of Music and Arts Technology)
IUPUI Center for the Enhancement of Teaching and Learning
IUPUI University Information Technology Services (UITS)
New England Conservatory of Music, Boston, MA
Notre Dame University, South Bend, IN
Taylor University, Upland, IN
United States Military Academy, West Point, NY
University of St. Francis, Fort Wayne, IN

Graduates of the M.S. in Music Technology program also hold positions in the following private companies, performing arts organizations, and educational centers:

Auralex Corporation, Indianapolis, Indiana
Black Entertainment Television (BET) Washington, DC
D'Addario Music Products, Farmingdale, New York
MakeMusic, Inc., Minneapolis, Minnesota
Music for All, Inc. Indianapolis, Indiana
National Arts Center, Athens (Greece)
National Arts Center, Beijing (China)
Ruth Lilly Health Education Center, Indianapolis, Indiana
Scripps Network Interactive, Nashville, Tennessee
Seoul Arts Center, Seoul (Korea)
Sirius Radio, New York
Soundtree Music Technology, New York
The Lodge Studio, Indianapolis, Indiana
Young Audiences, Indianapolis, Indiana

Impact

The importance of technology in the composition, performance, teaching, and scholarship of music and the arts today is immense. The rise of technologies such as file sharing, portable computing, and interactive media have transformed the very nature of how music is both created and experienced. While many music-based graduate programs incorporate music technology related studies in the curriculum, the Ph.D. in Music Technology outlined in this proposal is poised to uniquely contribute to the advancement of music technology as an academic discipline. It is expected that the Ph.D. program will produce academic and

professional leaders capable of addressing a rapidly changing environment driven by continual development and integration of technology. The scholarship and applied research produced by both faculty and students throughout the implementation of this program will serve as an important contribution to academic and professional research in the discipline. The curriculum's focus and original design will also serve as a model for developing and implementing other music technology-related graduate programs.

Program Description

Description of program and its objectives:

The principal objectives of this doctoral program are to train graduates who will: 1) conduct research and develop transformative new technologies in music and the arts, 2) examine the practices of designing, making, and managing music technology, 3) grow the methodologies of research in music technology, and 4) apply music technology in society and industry. See Appendix D for examples of specific Ph.D. dissertations emphasizing these areas.

NASM Standards

All aspects of the Ph.D. program are in accordance with the standards set forth by the department's accreditation agency, the National Association of Schools of Music (NASM). According to Section XVI of the NASM handbook,

"Doctoral degrees in music are intended for those planning to work at the most advanced academic and professional levels of musical endeavor. Students admitted to doctoral study are expected to achieve competencies that enable them to function consistent with their specializations as musicians, as scholars, and as teachers who can communicate effectively both orally and in written form."

The Ph.D. program in Music and Arts Technology addresses the comprehensive nature of the field, whose needs include designing new technological tools and techniques, leadership, business entrepreneurship, interdisciplinary research, and creative activity utilizing new and evolving technologies.

Whatever the specific focus of their music technology doctoral study, students will draw on course work from several disciplines.

Admission Requirements

The admission requirements follow standards set forth by the department's accreditation agency, NASM. GRE scores are recommended as one component to strengthen the prospective student's application. Applicants may be admitted into the Ph.D. program with a Master's in Music Technology or related field, or directly after completing undergraduate study.

All applicants will submit a digital portfolio representative of their music technology work as part of the application process. This portfolio will be examined by the program faculty to ascertain the applicants' knowledge and skills in music technology, music, and related areas. Included with this portfolio will be a Statement of Purpose, clearly indicating the applicant's research interests and potential direction for their dissertation research.

Applicants are expected to have a degree in Music Technology or a related field, however individuals with commensurate professional experience will be encouraged to apply. Additional remedial coursework may be assigned at the discretion of the program faculty for candidates entering without a Master's degree.

The program is expected to begin small and maintain a high degree of excellence. As the department grows with new faculty hires this Ph.D. Program is expected to grow as well. We anticipate starting with 1-2 students. Initially, the students will likely be funded from institutional resources, but as faculty grants increase in number and size, students may be funded as research assistants.

Description of the Proposed Curriculum

A total of 90 credit hours of graduate study are needed for this degree. The first 30 credit hours are required in order to earn a Masters, followed by 60 solely for the doctoral degree. The following curriculum requirements are incorporated in all students' individual Plans of Study.

The Plan of Study mechanism is in place to provide a rigorous framework for individualized academic pursuits. In their first semester of the Ph.D. program the student will complete and file an initial Plan of Study, which will be signed by the members of their Academic Advisory Committee and the MAT Graduate Coordinator. In the student's fourth semester (for students entering with a Master's degree, or sixth semester for students entering after a Bachelor's) the student will submit their final Plan of Study. This document will nominate the student's Doctoral Advisory Committee and be signed by these members and the MAT Graduate Coordinator. The appointment of the student's Major Professor will also be effected through the final Plan of Study. Changes to the filed Plans of Study may be accomplished through consultation with the active Advisory Committee and the MAT Graduate Coordinator.

Required courses in the Department of Music and Arts Technology

- MUS-N521 (3 credits) Research Methods in Music and Multimedia
- MUS-N531 (3 credits) Quantitative and Qualitative Research Methods in Music

The Ph.D. core:

Every student in the program will take two required courses:

- MUS- (TBD) (3 credits) History of Music Technology
- MUS- (TBD) (3 credits) Music Engineering Technology

Seminars:

Every student is required to take the departmental seminar in music and arts technology, MUS-E536 Graduate Music Technology Seminar, as long as they are in residency. This course serves as a venue for the presentation and discussion of the current state of the field, open problems and emerging trends, with lectures given by visiting faculty and experts, department faculty, and graduate students. This seminar has a minimum enrollment requirement of 2 semesters, conforming to the one year residency requirement.

Electives (12+ credits):

These courses will be selected by the student with the help of their Academic Advisor.

Minor (12 hours):

All students will take 12 credits in a Minor area formulated and approved as part of their Plan of Study in consultation with their Academic Advisor and the MAT Graduate Coordinator. These hours may be taken in the Department of Music and Arts Technology, other departments in the university, or a combination of courses from different units. Students electing to pursue the degree minor in a separate department or school must qualify according to the admission criteria by the hosting department's graduate studies regulations. The student will solicit an advisor in the Minor's area of scholarship to give guidance, ensure the student's eligibility, appropriate course selections, and participate in preparing qualifying and oral examinations. Outlines of sample 12 credit course offerings for various minors across the university are included in Appendix C.

Advisory Committees

Upon entry into the Ph.D. program in Music Technology each student will form their Academic Advisory Committee. The role of the Academic Advisory Committee is to advise and approve the student's Plan of Study. This committee must comprise a minimum of 2 MAT graduate faculty and a faculty member from the student's chosen minor subject area. The committee serves in an advisory capacity until the student passes the Qualifying Examination and forms his/her Doctoral Advisory Committee.

After successful completion of the Qualifying Examination the student will solicit faculty members to serve on his/her Doctoral Advisory Committee (DAC). The DAC consists of at least four members whose duties will be to advise the student during their final course of study and conduct the Preliminary and Final Examinations. The student's Major Professor serves as the chair of the DAC. The selection of the Major Professor requires his/her consent and the approval of the MAT Graduate Coordinator. The student's research interests should be strongly aligned with the Major Professor's specialties.

The DAC will comprise: the student's Major Professor, two additional MAT graduate faculty, and one faculty member representing the student's Minor area. Additional members may be included at the student's request. Inclusion of individuals without graduate faculty standing may be included with special certification from the Graduate School.

Examination Requirements:

The three major examinations that must be passed during the course of a Ph.D. program are the Qualifying Examination (QE), the Preliminary Examination, and the Final Examination. The purpose of the QE is to verify that students have mastered fundamental area-related topics in the student's major and minor areas at the core course level. The purpose of the Preliminary Examination is to determine whether a student is adequately prepared to conceive and undertake a suitable research topic. The Preliminary Examination typically includes an oral presentation and a written thesis proposal. The purpose of the Final Examination or oral defense of the dissertation is to determine if the thesis research warrants granting the Ph.D. degree. Doctoral research must be original and merit publication in the scholarly literature.

Qualifying Examination:

All students are required to take a common written Qualifying Examination, a day long closed-book exam offered once a year prior to the start of the Fall semester. The examination will be

drafted by a departmental Examination Committee and will cover the core areas of music technology as outlined by the courses in the music technology core, including research methods, theory, and analysis. The QE will be essay-based, as is common with departmental level examinations for graduate music degree programs. An individualized component of the exam will focus on each student's Minor area and its relationship to music technology. The student will develop, under the direction of his or her advisor, a description of the field of study and a bibliography to serve as the basis for the Minor area exam. The student's graduate faculty advisor from the subject area will draft the Minor area topic questions in coordination with the Examination Committee.

The QE must be passed prior to the student's scheduling of the Preliminary Examination. Students entering with a Master's are encouraged to take the QE the first time it is offered after entry into the program (i.e. typically after the first year of study.) Students entering with Bachelors' can take the QE after their second year of study. There is no limit on the number of attempts to pass the exam.

Students failing portions of the QE may be recommended remediation by their Academic Advisory Committee and/or the MAT Graduate Coordinator. This will typically take the form of passing a specific course with a grade of B or better, auditing a previously taken course and assembling evidence of comprehension, and/or retaking a part or all of the QE. All remediation activities must be completed prior to scheduling the Preliminary Examination.

Requirements for Doctoral Candidacy

Candidates for the Ph.D. in music technology shall demonstrate the following (through successfully completing the QE) as a prerequisite to qualifying for the degree (based on NASM accreditation standards):

1. Intellectual awareness and curiosity sufficient to predict continued growth and contribution to the discipline.
2. Significant advanced, professional-level accomplishment in both a musical and technical domain.
3. Knowledge of the techniques of music theory sufficient to perform advanced analysis.
4. Knowledge of representative literature and composers of each major period of music history.
5. Knowledge of general bibliographical resources in music.
6. Considerable depth of knowledge in some aspect of music, such as an historical period, an aspect of theory, performance practice, or compositional styles.
7. Sufficient writing and speaking skills to communicate clearly and effectively to members of the scholarly community and the wider community, and especially in teaching situations.
8. Research skills appropriate to the student's specific focus within Music Technology, including expertise with appropriate methodologies and analysis tools.

Preliminary Examination:

The Preliminary Examination is given to determine whether a student is adequately prepared to conceive and undertake a suitable research topic in the student's major and minor areas. Students may not schedule their Preliminary Examination until after they have passed the Qualifying Examination and submitted their final Plan of Study. The Preliminary Examination is primarily an oral examination associated with a written thesis proposal, but may include a written exam component at the discretion of the Doctoral Advisory Committee. Students must

complete the Preliminary Examination at least two academic sessions (counting regular semesters and summer sessions), for which they are registered, before taking the Final Examination. The written dissertation proposal should be submitted to members of the Doctoral Advisory Committee at least two weeks before the examination.

During the Preliminary Examination, the student is expected to exhibit:

- A clear understanding of the research problem;
- An awareness of pertinent background literature and current efforts in the research area of interest;
- Some initial progress toward solving the research problem; and
- A plan to execute the remainder of the dissertation research.

Only two attempts to pass this examination will be allowed.

Dissertation proposal:

A written narrative of original research must be approved by the Doctoral Advisory Committee in a public defense as described in the Graduate School Bulletin. Students enroll in N699 each semester after the dissertation topic is approved until the research has been completed.

Time Limit for Completion of the Ph.D. Degree:

Students entering the Ph.D. program with a Master's degree are to complete all degree requirements within six equivalent full-time years from the beginning of their first semester registration. Those entering the program with a Bachelor's degree have seven years to complete their degree requirements.

Extension to the cited time limit may be requested in writing and approved at the recommendation of the student's Doctoral Advisory Committee and the MAT Graduate Coordinator. Only full semesters are counted toward the time limit. A student who is not in good standing with regard to the cited time limit will not be allowed to register for the following semester without the approval of the MAT Graduate Coordinator.

Sample curriculum:

The following example covers a curriculum for a music technology student pursuing a minor in Computer Information Technology with an emphasis in data structures and databases. This plan of study would be appropriate for dissertation topics falling broadly in the field of Music Information Retrieval.

Semester 1

MUS-N512	(3 credits) Foundations of Music Production
MUS-N521	(3 credits) Research Methods in Music and Multimedia
(TBD)	(3 credits) Music Engineering Technology
MUS-E536	(0 credit) Graduate Music Technology Seminar

Semester 2

MUS-N513	(3 credits) Principles of Multimedia Technology
MUS-N531	(3 credits) Quantitative and Qualitative Research Methods in Music

(TBD) (3 credits) History of Music Technology
MUS-E536 (0 credit) Graduate Music Technology Seminar

Semester 3

TECH-507 (3 credits) Measurement and Evaluation in Industry and Technology
MUS-N514 (3 credits) Music Technology Methods
MUS-N519 (3 credits) Digital Sound Design for Multimedia I
MUS-E536 (0 credit) Graduate Music Technology Seminar

Semester 4

TECH-581 (3 credits) Database Security
MUS-N515 (3 credits) Multimedia Design Applied in the Arts: Application Design
MUS-N520 (3 credits) Digital Sound Design for Multimedia II
MUS-E536 (0 credit) Graduate Music Technology Seminar
Qualifying Examination: student takes and passes this exam prior to commencement of the 3rd year of study.

Semester 5

MUS-N516 (3 credits) Advanced Interactive Design Applications in the Arts
MUS-N522 (3 credits) Techniques for Music Performance, Teaching, and Production at a Distance
TECH-581 (3 credits) Advanced Topics in Database
MUS-E536 (0 credit) Graduate Music Technology Seminar

Preliminary Examination: during the 3rd year of study the student schedules and completes this exam.

Semester 6

MUS-E 536 (3 credits) Social Media and the Musician
ECE-526 (3 credits) Introduction to Intelligent Systems
TECH-646 (3 credits) Analysis of Research in Industry and Technology
MUS-E536 (0 credit) Graduate Music Technology Seminar

Semester 7

GRAD-G599 (9 credits) Thesis Research
MUS-E536 (0 credit) Graduate Music Technology Seminar

Semester 8

GRAD-G599 (9 credits) Thesis Research
MUS-E536 (0 credit) Graduate Music Technology Seminar

The proposed curriculum contains the following existing courses as required core courses:

MUS-E536 Graduate Music Technology Seminar

MUS-N521 Research Methods in Music and Multimedia

MUS-N531 Quantitative and Qualitative Research Methods in Music (currently titled “Music Therapy Quantitative and Qualitative Research”).

The proposed curriculum contains the following new courses. These courses are headed for review by the school GAC, with anticipated approval in advance of the Ph.D. program commencement.

MUS- (TBD) History of Music Technology

This course explores historical paradigms that helped shape the progression of technology in music and related fields since 1945. Treatment is given to a variety of movements, music-forms, communities and entities who contributed to their age through technological, conceptual, and artistic innovation. Class discussions and blogs will promote phenomenological understanding of the studied content, particularly as it relates to current trends. Through the study of the past, the class will develop rationales for new and emerging technologies that relate to the expression of music.

MUS- (TBD) Music Engineering Technology

This course provides an overview and in-depth treatment of core engineering concepts that are foundational to music technology. Topics include acoustics and psycho-acoustics as related to music, digital audio, digital signal processing for music, and systems design in Music Technology. Students will develop an understanding of fundamental elements that appear across the breadth of the current field and look towards emerging developments and open problems in music technology.

Form of Recognition

Students in this program will receive the degree Doctor of Philosophy in Music Technology. The program is designed to prepare students to enter academic research and teaching positions at the university level and to prepare researchers for industry.

CIP Code

Proposed: 50.0913.

Based on the following: Ph.D. in Music Technology, University Graduate School, offered through the IUPUI School of Engineering and Technology, Department of Music and Arts Technology.

Ph.D. Program Faculty and Administrators

Administrators:

Debra S. Burns, Associate Professor and Department Chair, Music and Arts Technology, IUPUI
W. Scott Deal, Professor and Director of the Donald Tavel Arts and Technology Research Center, Music and Arts Technology, IUPUI

G. David Peters, Professor and MAT Graduate Coordinator, Music and Arts Technology, IUPUI

Graduate Faculty:

Darrell Bailey, Professor, Music and Arts Technology, IUPUI
Robin C. Cox, Assistant Professor, Music and Arts Technology, IUPUI
Michael Drews, Associate Professor, Music and Arts Technology, IUPUI
Fred J. Rees, Professor, Music and Arts Technology, IUPUI
Benjamin Smith, Assistant Professor, Music and Arts Technology, IUPUI

Other Program Strengths

The Jacobs School of Music Program at IUPUI was initially created as a place where innovative and contemporary performing arts programs could thrive. Becoming the Department of Music and Arts Technology in the Purdue School of Engineering and Technology at IUPUI in spring of 2009, it is unique among such programs among the Indiana University campuses. Its faculty created the first online graduate degree in Music Technology in the world. Students who emerge from this degree program will be able to shape the direction of music technology as a developing discipline being the first Ph.D. program in music technology with that mission through the scholarly work they undertake in the creative, engineering, environmental and music cognition development and employment of music technologies. These graduates will change the manner in which music will be experienced in the future by designing solutions for the issues confronting the arts, multimedia, and music communities.

Program Rationale

Compatibility with the mission of IUPUI and the School of Engineering and Technology

The Ph.D. in Music Technology seeks to further from the mission of IUPUI by advancing the State of Indiana and the intellectual growth of its citizens through fostering new research and creative activity, teaching and learning, and civic engagement in the nascent field of Music Technology. This program broadens the range of Ph.D. degree programs offered at IUPUI, and will be the first Ph.D. program originating from a department of Technology at IUPUI. Music Technology was born through innovative collaborations and partnerships between musicians, computer scientists, engineers, mathematicians, and more, and this program embraces that approach, growing world-class graduates through collaborations, external partnerships, and a strong commitment to diversity.

State Rationale

In the State of Indiana the Ph.D. program will have a positive impact in several regards. The program will attract motivated and effective applicants from around the world to enhance IUPUI and the MAT department during their tenure.

Within Indiana the following schools have started new undergraduate programs in Music Technology, and related areas, over the last decade indicating regional growth and labor market need:

- IUPUI, B.S. in M.T.
- University of Saint Francis, B.S. and A.S. in M.T.
- University of Indianapolis, B.S. in M.T.
- Ball State, B.M. in M.T.
- IPFW, B.S. in M.T.
- IUS, B.A. in Music with an emphasis in Sound Engineering.
- Goshen College, B.M. in Business & Technology

- IUB, A.S. and B.S. in Recording Arts.

Further, graduates will serve to enhance Music Technology businesses in researching and developing new technologies to increase the effectiveness and competitiveness of Indiana companies (See Appendix F for solicited letters of endorsement). Leading examples of these companies, based in Indiana, capable of employing Ph.D.s in Music Technology are Klipsch, Auralex, and Conn-Selmer.

The highly interdisciplinary foundations of Music Technology indicate graduates of the Ph.D. program continuing in this tradition through entrepreneurial ventures and new business opportunities. Given the attractive economic climate of Indiana it is expected many of these innovative business developments will be based here.

Evidence of Labor Market Need

Music technology is emerging internationally as an academic discipline and requires more qualified individuals to fill academic positions in support of new programs. In recent years, music technology degree programs have been proliferating throughout the country. Currently more than 60 collegiate institutions offer B.S., B.F.A., B.M., or B.A. degrees in music technology (Phillips, 2013), up from 40 a few years earlier (Phillips, 2009). Emphases in these programs include audio production, music engineering technology, music industry, commercial music, music education, and music composition. In Indiana four undergraduate music technology degrees have been established since 2005.

There is growing evidence in the job marketplace, particularly at collegiate level, for faculty with music technology backgrounds. Since Fall 2012, there have been at least 38 collegiate position announcements for faculty with expertise in music technology related fields (www.higheredjobs.com). Additionally, during the same period, the Chronicle of Higher Education and the College Music Society monthly newsletter listed the following universities with announcements for music technology positions:

Capital University
Drexel University
Eastern Kentucky University
Georgia Institute of Technology
Indiana University
IUPUI
Montclair State University
Northeastern University
Sam Houston State University
State University of New York College at Purchase
Virginia Institute of Technology
University of Alabama at Birmingham
University of California, Santa Cruz
University of Louisiana at Lafayette
University of New Orleans
University of Northern Colorado
University of Southern California
University of Virginia

Planning and Implementation of the Program

During the approval process of this program the new graduate courses will enter the department's teaching rotation and be offered for current students. Upon approval the program will be publicized widely, through the IU system, appropriate professional bodies (such as the International Computer Music Association), and academic program catalogs including the Chronicle for Higher Education. Facilities will be redressed to include lab space for incoming students. With the acceptance of the first students a faculty sub-committee will be formed to provide support and guidance for students and the program in its first years. Implementation of a plan to grow the program will be developed in consultation with Dean Russomanno, through the robust revenue generated by department service credit hours.

Impact on Other Instructional, Research or Service Programs at IUPUI

The schools and departments most directly affected appear to be the following: other departments within the Purdue School of Engineering and Technology, the School of Informatics and Computing, and the Herron School of Art and Design.

The impact assessment is positive in bringing advanced graduate students to enroll in selected courses in these other academic units as permitted by their faculties. The Music and Arts Technology Department will seek cooperation and collaboration with various schools, departments, and programs, creating a synergy that increases the overall strength of the Music Technology Ph.D. and more generally Indiana University as an institution.

Ways in which the program will utilize existing resources

There is a missing synergy in our program without Ph.D. students. We have faculty who need Ph.D. students in support of both their research and teaching. Currently we are using our master's students in these roles but more experienced, mature students will enhance the department's innovation. Ph.D. students will allow our faculty not only to educate the future leaders in Music Technology, but will also allow these students to help educate undergraduate students.

Student Demand

Derivation of enrollment projections: see Appendix A.

The program will maintain high academic standards by admitting only the best applicants, with a target of 1-2 new candidates each year. As the department faculty grows this number will be raised. This number is commensurate with other programs of similar size.

The figures in Tables 1 and 2 (in appendix A) are based on the assumptions that 1-2 students will enter the program each year. Of these students 2 are anticipated to be full-time and 1 part-time. Students must satisfy a 1-year residency requirement and it is anticipated that up 30% of candidates will be non-residential students. Completion will begin in year 4, with 2 anticipated degrees conferred, followed by 3 in the following year.

Costs and Needed Learning Resources

Faculty and Staff

Initially, we will offer the program with existing full-time faculty members. If the new Ph.D.

degree program meets its graduation and enrollment goals (2 graduates and overall enrollment of 5 students) within the first four years, and maintains or exceeds its 2013-2014 academic year credit hour production, one new tenure-track faculty line will be requested with expertise in an area that augments and extends the strengths of current faculty and the department. Expertise in grant writing will be essential. This person will teach in the MAT graduate program and attract and support high quality Ph.D. students as research assistants.

Faculty and administrators involved with the program

Currently the department of MAT contains seven faculty with expertise to teach courses in support of the Ph.D. (see *Ph.D. Program Faculty and Administrators*, above.) Interdisciplinary faculty may participate or be contracted to participate in the program, based on individual students' needs. Current department staff are adequate to negotiate the demands of the doctoral program.

An appropriate level of travel, recruiting, and "supplies and equipment" would be associated with the new degree as well, as indicated in the following tables.

Budget tables may be found in Appendix B.

Facilities

Initially, this new degree will be able to use existing resources; additional facilities may be needed as the program grows, but those needs will be relatively modest. The Purdue School of Engineering and Technology and the University Information Technology Services already provide many of the technical resources that students and faculty members will need. In addition, the Music and Arts Technology Department is reassessing and equipping current classroom spaces to better support the growing instructional needs of the department and this degree program.

Other Capital Costs (e.g., Equipment)

None

Nature of Support (Existing, Startup, and Growth/Reallocation)

The MAT department's ultimate goal is to sponsor 1 Ph.D. student for each research-intensive faculty member. As research and creative activity grows, it is anticipated that research-intensive faculty would aspire to have additional Ph.D. students. It is expected that additional funding for Ph.D. students would come from external sources, including, but not limited to, grants and contracts, philanthropic support, and other revenue generation streams. Moreover, it is anticipated that some Ph.D. students will not receive departmental or other means of School-sponsored support. Highly qualified graduate students with research interests aligned with faculty may qualify for GA positions that provide tuition, healthcare, and a competitive stipend. Initial support for students is described below:

Existing E&T and MAT Sources of Support

The following mechanisms currently exist as sources of support for MAT Ph.D. students:

- 1) The School of Engineering and Technology provides \$4,000 per semester (\$8,000 per year) in support for new, non-resident full-time graduate students in their first year of study.
- 2) The School pays the non-resident portion of the instructional fees (tuition) for all full-time GAs (20 hour appointment as Teaching Assistants or Research Assistants, or combination

thereof) who are funded by any departmental means, including base budget, cash, external grants, etc.

- 3) The Department of MAT currently maintains an annual base budget of \$76,000 to support graduate students.

Program Startup Support

Upon approval of the new Ph.D. program, it will benefit from the following sources of one-time program startup support. It is expected that the MAT department will sustain the startup support through revenue growth and reallocation.

School of Engineering and Technology

The School of Engineering and Technology has committed to provide full funding (cash support) for one MAT Ph.D. student for four years. This funding includes full tuition remission, mandatory health insurance, and University-specified minimum stipend for a 20-hour assistantship (\$925.20 per month for 10-months as of the proposal submission date). The MAT department may elect to augment the stipend.

Graduate School Sources of Support

Funds are available from the Graduate School, providing a fellowship for one student for one year to each new Ph.D. program (actual amount is based on available Graduate School funds and number of new Ph.D. programs in the year of commencement). After the initial cohort of students finish their first year, the department would be eligible to participate in the campus block grant application, thereby potentially securing additional funds to support Ph.D. students.

Revenue Growth/Reallocation

MAT Credit Hour Growth

The MAT department offers several service courses in addition to its courses for majors. Baseline undergraduate and graduate credit hour production within MAT for the 2013-2014 academic year is approximately 10,000 credit hours (excluding summer). Faculty members continue to develop service courses that are applicable to the new Common Core requirements for all students enrolled as undergraduates at IUPUI. Additionally, the growth of Bachelor's degree (BSMT) seeking students as the program matures will provide additional revenue to support graduate students. The MAT department is committed to pursuing the growth of credit hour production as a means to support its graduate programs and this proposed Ph.D. program.

Reallocated Sources of Support

As qualified students are admitted into the program and assume teaching responsibilities, additional budget lines may be reallocated for student support (e.g., the use of adjuncts may diminish based on graduate students serving as departmental T.A.s).

Special Fees above Baseline Tuition

No special fees are attached for admission to this program.

Similar and Related Programs

Similar Programs at Other Institutions in Indiana

There are no doctoral programs in Music Technology in the state or region.

Related Programs at the Proposing Institution

There are no closely related Ph.D. programs in the IU system.

Similar Programs Outside Indiana

At a national level, there are two doctoral programs, at the Georgia Institute of Technology and New York University respectively. Georgia Tech's doctoral students are engineers, while the projected student constituency for MAT would be musicians with music technology skills. NYU's program has three strands (digital signal processing, film scoring and multimedia, and interactive music systems). Students from different backgrounds and qualifications would concentrate on one of these fields from the beginning of their course of study. By comparison, the MAT Ph.D. program would cover a common core of courses from which students could branch out to their respective areas of interest. Neither Georgia Tech's nor NYU's music programs are accredited by the National Association of Schools of Music.

Evaluation Plan

The Ph.D. program will be reviewed and modified each year by the departments Graduate Curriculum Committee. However, two formal and external evaluations of the doctorate will take place during year three and again during year five. The third year review will be a small one- to two-day review that includes an external person. The fifth year review will be a systematic three-day review that includes three external people. These reviews are not school reviews, but rather examine the strengths and weaknesses of the Ph.D. program. In both reviews, a written set of recommendations would be delivered to the Chair of Music and Arts Technology and the School of Engineering and Technology's Associate Dean for Graduate Studies. Prior to each of these reviews, procedures for the review process will be established consistent with similar reviews at Indiana University and other universities.

A critical priority for the Ph.D. program is the gainful employment of its graduates. This means that students are being prepared during their courses of study for career opportunities that currently exist and are being educated to acquire new skills and knowledge after graduation for jobs in the music profession that rely on music technology. To maintain academic credibility and to offer guidance on career opportunities for graduates, the department's Music Industry Advisory Board will serve as the peer review body for the degree program.

Membership of the Board currently consists of ten people in leadership positions with their respective companies or educational institutions. It comprises of two people from Indiana companies (e.g., Klipsch, Auralex), four from national and international companies (Roland USA, Yamaha Corporation of America, MakeMusic, Alfred Music), and two music faculty members from collegiate institutions with extensive experience in music technology (Georgia Institute of Technology and Butler University).

Licensure and Certification:

There are no such requirements for a Ph.D. in Music Technology.

Accreditation

The department of Music and Arts Technology has held accreditation from the National Association of Schools of Music (NASM) in 2011.

Data Sources

Berklee College of Music (2012). *Music careers in dollars and cents* (2012 ed.). Berklee College of Music, Boston: Massachusetts.
http://www.berklee.edu/pdf/pdf/studentlife/Music_Salary_Guide.pdf

Bureau of Labor Statistics, Occupational Outlook Handbook, Postsecondary Teachers
<http://www.bls.gov/ooh/education-training-and-library/postsecondary-teachers.htm#tab-6>

Phillips, S. L. (2009). *A survey of university music technology programs in the United States*. Presentation at the Association for Technology in Music Instruction Conference, Portland, OR, October 22, 2009.

Phillips, S. L. (2013). *Beyond sound: The college and career guide in music technology*. USA: Oxford University Press.

Stankovic, John, and William Aspray. "Recruitment and Retention of Faculty in Computer Science and Engineering." Computing Research Association, 2003
<http://www.cra.org/reports/r&rfaculty.pdf>

Appendix A

Student Enrollment Projections

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY						
Institution/Location:	Indiana University-Purdue University Indianapolis					
Program:	Ph.D. in Music Technology					
Proposed CIP Code:	50.0913					
Base Budget Year:	2013-14					
		Year 1	Year 2	Year 3	Year 4	Year 5
		<u>2015-16</u>	<u>2016-17</u>	<u>2017-18</u>	<u>2018-19</u>	<u>2019-20</u>
Enrollment Projections (Headcount)						
Full-time Students		2	2	3	4	5
Part-time Students			<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>
Total		2	3	4	5	5
Degree Completion Projection					2	3

Appendix B

Budget Tables

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY											
INTERNAL BUDGET TABLE (not to be included in proposal)											
Institution/Location:	Indiana University-Purdue University Indianapolis										
Program:	Ph.D. in Music Technology										
Proposed CIP Code:	50.0913										
Base Budget Year:	2012-13										
			Year 1		Year 2		Year 3		Year 4		Year 5
		FTE	2014-15	FTE	2015-16	FTE	2016-17	FTE	2017-18	FTE	2018-19
EXISTING RESOURCES											
Existing Faculty		-	\$-	-	\$-	-	\$-	-	\$-	-	\$-
Other Existing Resources			-		-		-		-		-
Total Reallocation			\$-		\$-		\$-		\$-		\$-
NEW COSTS											
Personnel Services											
Faculty		-	-	1.0	\$50,000	1.0	\$100,000	1.0	\$100,000	1.0	\$100,000
Adjunct Faculty		-	-	-	-	-	-	-	-	-	-
Staff		-	-	-	-	-	-	-	-	-	-
Graduate Assistants		-	-	-	-	-	-	-	-	-	-
Total Personnel Services			-		\$50,000		\$100,000		\$100,000		\$100,000
Supplies and Expense											
General Supplies and Expense			\$5,000		\$10,000		\$12,500		\$15,000		\$20,000
Recruiting			-		-		-		-		-
Travel			-		-		-		-		-
Library			-		-		-		-		-
Total Supplies and Expense			\$5,000		\$10,000		\$12,500		\$15,000		\$20,000
Equipment											
New Equipment (see narrative)					\$-		\$-				
Equipment Replacement			-		-		-		-		-
Total Equipment			\$-		\$-		\$-		\$-		\$-
Facilities (see narrative)			\$-		\$-		\$-		\$-		\$-
Student Assistance											
Graduate Fee Scholarships			\$-		\$-		\$-		\$-		\$-
Fellowships			-		-		-		-		-
Total Student Assistance			\$-		\$-		\$-		\$-		\$-
Total New Costs			\$5,000		\$60,000		\$112,500		\$115,000		\$120,000
TOTAL w/REALLOCATION			\$5,000		\$60,000		\$112,500		\$115,000		\$120,000

SOURCES OF FUNDING											
New Revenues											
New Student Fee Income			\$34,000		\$51,800		\$56,600		\$79,600		\$60,500
Other (please specify)			–		–		–		–		–
Total New Revenue			\$34,000		\$51,800		\$56,600		\$79,600		\$60,500
TOTAL SOURCES w/REALLOCATION			\$34,000		\$51,800		\$56,600		\$79,600		\$60,500
Unexplained surplus/(deficit)			\$29,500		(\$8,200)		(55,900)		(35,400)		(59,500)

Appendix C

Minor Plans of Study

This appendix outlines sample course offerings for various minors across the university. Other minors may be formulated according to the criteria set forth in this document. Students electing to pursue the degree minor in a separate department or school must qualify according to the admission criteria by the hosting department's graduate studies regulations. Students will work with the director of graduate studies in each department in order to obtain the appropriate course sequence. An advisor for the Ph.D. student will be obtained in the Minor department to give guidance on the students eligibility, course selection, and to advise on the student's degree oral and written qualifying examinations.

Potential Certificates

School of Informatics: Human Computer Information
<http://soic.iupui.edu/graduate/hci/graduate-certificate/>

INFO H541 Interaction Design Practice (3 cr.)
INFO H563 Psychology of HCI (3 cr.)
INFO H543 Interaction Design Methods (3 cr.)
INFO H561 Meaning and Form in HCI (3 cr.)
INFO H564 Prototyping for Interactive Systems (3 cr.)

A student pursuing this minor would be focused on music software design, including developments in digital audio workstations, audio editing systems, music education software, and interactive systems.

E&T Department of Mechanical Engineering
<http://et.engr.iupui.edu/departments/me/grad/certificates/index.php>

ME 551 Finite Element Analysis (3 cr.)
ME 546 CAD/CAM: Theory and Applications (3 cr.)
ME 561 Optimum Design: Theory and Practice (3 cr.)
ME 563 Mechanical Vibrations (3 cr.)

Pursuing a minor in Mechanical Engineering is appropriate for a student interested in the design, development, and research of music technology focusing on instrument design, speaker and microphone design, and technology for public address systems.

E&T Department of Computer Information and Graphics Technology
<http://et.engr.iupui.edu/departments/cigt/>

TECH 507 Measurement and Evaluation in Industry and Technology (3 cr.)
TECH 581 Database Security (3 cr.)
TECH 581 Advanced Topics in Database (3 cr.)
TECH 646 Analysis of Research in Industry and Technology (3 cr.)

Pursuing a minor in Computer Information Technology allows the student to focus on music technology and information systems, appropriate for work in Music Information Retrieval and

music data mining dissertations.

E&T Department of Technology Leadership and Communication
<http://et.engr.iupui.edu/departments/tlc/courses/ols/index.php>

OLS 574 Managerial Training and Development (3 cr.)
OLS 580 Interpersonal Skills for Leaders (3 cr.)
OLS 581 Leadership Ethics (3 cr.)
OLS 582 Leadership and Organizational Change (3 cr.)

This minor plan of study is appropriate for students focused on impacts of music technology in organizations and leadership.

Department of Mathematical Sciences
<http://math.iupui.edu/graduate/courses/m>

STAT 529 Applied Decision Theory and Bayesian Analysis (3 cr.)
MATH 537 Applied Mathematics for Scientists and Engineers I (3 cr.)
MATH 559 Applied Computational Methods I (3 cr.)
MATH 567 Dynamical Systems I (3 cr.)

The student focusing on the development of computational music systems could pursue a minor drawing from the courses offered in Mathematical Sciences.

IU School of Education
<http://education.iupui.edu/programs/graduate/index.php>

EDUC A500 Introduction to Educational Leadership (3 cr.)
EDUC A510 School Community Relations (3 cr.)
EDUC A608 Legal Perspectives on Education (3 cr.)
EDUC P540 Learning and Cognition in Education (3 cr.)

Ph.Ds. focusing on developments and impacts of music technology in education would formulate a minor plan of study in conjunction with the IU School of Education.

Herron School of Art Visual Communication and Design
<http://www.herron.iupui.edu/designleadership>

Students focusing on the intersections of visual arts and communication design may draw from the graduate course offerings at the Herron School to tailor their plan of study appropriately.

IU Kelley School of Business, Evening MBA
<http://kelley.iupui.edu/evening-mba>

Appendix D

Example Dissertation Topics applicable to the Ph.D. in Music Technology

Malloch, J. (2013). A Framework and Tools for Mapping of Digital Musical Instruments. Ph.D. thesis, Music Technology, McGill University, Montréal.

Abstract: Digital musical instruments (DMIs) are typically composed of an interface using some type of sensor technology, and real-time media synthesis algorithms running on a digital computer. The connections between various input signals from performer interaction and the parameters of synthesis must be artificially associated – this mapping of gesture to sound or other media defines the behaviour of the system as a whole. Mapping design is a challenging and sometimes frustrating process.

In this dissertation, the design and implementation of an open-source, cross-platform software library and several related tools for supporting the mapping task are presented. These tools are designed to provide discovery and interconnection between parts of DMIs and other interactive systems, and to achieve compatibility through translation and transformation of data representations rather than imposing representation standards. The control parameters of software and hardware devices compliant with libmapper can be freely interconnected without requiring any intended mutual compatibility.

Among the unique features presented is support for mapping between systems that include entities with multiple instances with dynamic lifetimes, systems which would usually require bespoke programming. A formalization of the problem is described, and several examples of real-world applications are outlined.

Finally, use-cases for the mapping tools are presented in-depth: the design, development and use of novel digital musical instruments for live performance.

Gómez, Emilia. "Tonal description of music audio signals." Ph.D. diss., Ph.D. thesis, UPF Barcelona, 2006.

Abstract: This dissertation is about tonality. More precisely, it is concerned with the problems that appear when computer programs try to automatically extract tonal descriptors from musical audio signals. This doctoral dissertation proposes and evaluates a computational approach for the automatic description of tonal aspects of music from the analysis of polyphonic audio signals.

In this context, we define a tonal description in different abstraction levels, differentiating between low-level signal descriptors (e.g. tuning frequency or pitch class distribution) and high-level textual labels (e.g. chords or keys). These high-level labels require a musical analysis and the use of tonality cognition models. We also establish different temporal scales for description, defining some instantaneous features as being attached to a certain time instant, and other global descriptors as related to a wider segment (e.g. a section of a song).

Along this Ph.D. thesis, we have proposed a number of algorithms to directly process digital audio recordings from acoustical instruments, in order to extract tonal descriptors. These algorithms focus on the computation of pitch class distributions descriptors, the estimation of the key of a piece, the visualization of the evolution of its tonal center or the measurement of the similarity between two different musical pieces. Those algorithms have been validated and evaluated in a quantitative way. First, we have evaluated low-level descriptors, such as pitch class distribution features and estimation of the tuning frequency (with respect to 440 Hz), and their independence with respect to timbre, dynamics and other external factors to tonal characteristics. Second, we have evaluated the method for key finding, obtaining an accuracy around 80%. This evaluation has been made for a music collection of 1400 pieces with different characteristics. We have studied the influence of different aspects such as the employed tonal model, the advantage of using a cognition-inspired model vs machine learning methods, the location of the tonality within a

musical piece, and the influence of the musical genre on the definition of a tonal center. Third, we have proposed the extracted features as a tonal representation of an audio signal, useful to measure similarity between two pieces and to establish the structure of a musical play. For this, we have evaluated the use of tonal descriptors to identify versions of the same song, obtaining an improvement of 55% over the baseline.

From a more general standpoint, this dissertation substantially contributes to the field of computational tonal description

- It provides a multidisciplinary review of tonal induction systems including signal processing methods and models for tonality induction;
- It defines a set of requirements for low-level tonal features;
- It provides a quantitative evaluation of the proposed methods with respect to similar ones for audio key finding. This quantitative evaluation is divided in different stages, analyzing the influence of each one;
- It supports the idea that some application contexts do not need a accurate symbolic transcription, thus bridging the gap between audio and symbolic-oriented methods without the need of a perfect transcription;
- It extends current literature dealing with classical music to other musical genres;
- It shows the usefulness of tonal descriptors for music similarity;
- It provides an optimized method which is used in a real system for music visualization and retrieval, working with over a million of musical pieces.

Katz, Mark. *The phonograph effect: the influence of recording on listener, performer, composer, 1900-1940*. Ph.D. Diss., University of Michigan, 1999.

Published and expanded as:

Katz, Mark. *Capturing sound: how technology has changed music*. Univ of California Press, 2010.

Abstract: Before the phonograph, when the final note of a piece of music finished, it would only exist in our memories. In *Capturing Sound: How Technology Has Changed Music* by Mark Katz, the author explores how music progressed from a rare indulgence to what is now a readily available commodity for solitary consumption or presentation to either the engaged or passive audience. Starting with Edison's phonograph, *Capturing Sound* provides a chronological analysis of technology's relationship with music. Katz proceeds to such topics as how early recording had a lasting influence on modern violin performance, the DJ's re-contextualization of the phonograph as a musical instrument, and how digitization of music accelerated new musical genres while also causing the perceived downfall of the music industry.

Music did not develop as an art independently from technology, nor did technology develop without music's influence. As applied science became more involved with music, technology and artists changed together. Some musicians and composers conformed to imposed limitations while others embraced the newfound abilities of technology. By drawing upon several pertinent historic technological advancements, Katz considers how artists and audiences contemporaneous to these events responded to them. Within these specific case studies the reader is exposed to the fine details of technological influences on music. The scope is then widened to provide a sense of how the impact of technology spread elsewhere in music. Within *Capturing Sound's* 221 pages, Katz reveals what preserving sound has done to music and how it functions in our lives.

Théberge, Paul. *Any sound you can imagine: Making music/consuming technology*. Wesleyan University Press, 1997.

Abstract not available.

Jorda, Sergi. "Digital Lutherie: Crafting musical computers for new musics performance and improvisation." *Ph.D. diss., Universitat Pompeu Fabra, Departament de Tecnologia* (2005).

Abstract: This is a dissertation about performing music with computers, and about constructing the tools that will facilitate playing and improvising with these computers. The primary aim of this research is to construct a theoretical framework that could serve in evaluating the potential, the possibilities and the diversity of new digital musical instruments, with the hope that these ideas may inspire and assist the construction of new and powerful instruments with which perform and listen to wonderful new and previously unheard music.

Computer-based interactive music systems date back to the late 1960s, initially involving computer-controlled analog synthesizers in concerts or installations. The use of real-time algorithmic composition spread in the 1970s with the work of composers and performers such as David Behrman, Joel Chadabe, Salvatore Martirano, Gordon Mumma or Laurie Spiegel. However the most rapid period of growth probably occurred during the mid 1980s with the MIDI standardization and, subsequently, with the advent of data-flow graphical programming languages such as Max, which made the design and implementation of custom interactive systems simpler than ever before. In spite of this, nearly four decades after the works of these pioneers, the design of computer-based music instruments, and computer music performance and improvisation in general, still seem immature multidisciplinary areas in which knowledge does not behave in incremental and accumulative ways, resulting in the permanent 'reinvention of the wheel'.

New digital instrument design is a broad field, encompassing highly technological areas (e.g. electronics and sensor technology, sound synthesis and processing techniques, software engineering, etc.), and disciplines related to the study of human behavior (e.g. psychology, physiology, ergonomics and human-computer interaction components, etc.). Much of this focused research attempts to solve independent parts of the problem an approach essential to achieve any progress in this field. However, as this dissertation will show, it is also clearly insufficient. I believe an approach dedicated to the integrated understanding of the whole is the key to achieving fruitful results. Integral studies and approaches, which consider not only ergonomic or technological but also psychological, philosophical, conceptual, musicological, historical and above all, musical issues, even if non-systematic by definition, are necessary for genuine progress.

Putting forward the idea that a digital instrument is a conceptual whole, independent of its potential components and features (e.g. the ways it is controlled or its sonic or musical output tendencies), we will investigate the essence and the potential highlights of new digital instruments, the new musical models and the new music making paradigms they can convey.

This dissertation begins with the assumption that better new musical instruments based on computers can only be conceived by exploring three parallel paths

- identifying the quintessence of new digital instruments; what they can bring of really original to the act of music performance; how can they redefine it;
- identifying the drawbacks or obsolescences of traditional instruments; what limitations or problems could be eliminated, improved or solved;
- without forgetting the essential generic assets of traditional instruments; those qualities that should never be forgotten nor discarded.

The identification of these points is the primary aim of this thesis. There is a complex interconnected relationship between the tasks of imagining, designing and crafting musical computers, and performing and improvising with them. This relationship can only be understood as a permanent work in progress. This thesis comes from my own experience of fifteen years as a luthier-improviser. Therefore the dissertation is both theoretical (or conceptual) and experimental in approach, although the experiments it documents span years, even decades. To better organize this, the thesis is divided in three parts.

Part I progressively enlightens the aforementioned three fundamental exploration paths. This is achieved by introducing the new possibilities offered by digital instruments, in addition to providing a thorough overview of current know-how and of the technical and conceptual frameworks in which new instrument designers and researchers are currently working on. Several taxonomies that will help us in developing a more synthetic and clear overview of the whole subject, are also presented. This first part concludes in chapter seven, presenting the first fundamental contribution of this dissertation; a theoretical framework for the evaluation of the expressive possibilities new digital musical instruments can offer to their performers.

Part II describes in depth seven musical instruments, the implementations of my journeys into Digital Lutherie, developed during the previous decade. Since all seven are conceptually very different, each of them serves to illustrate several paradigms introduced in Part I. Presented in chronological order, these music instrument also help to clarify and understand of the path that has led me to the conception of the framework previously introduced.

Part III incorporates the teachings and conclusions resulting from this evolutionary journey, and present the final milestone of this dissertation the presentation of possible solutions to better accomplish the goals presented at the end of the part I. Finally this dissertation concludes with what could be considered 'my digital lutherie decalogue' which synthesizes most of the ideas introduced in the thesis. As a postlude, I offer the reacTable* to be presented as future work. The reacTable* is a digital instrument which constitutes the first one conceived from scratch, that takes into account all the concepts introduced in this thesis, the culmination thus far of my journey into Digital Lutherie

Appendix E

Faculty Curriculum Vitae

CURRICULUM VITAE
Debra S. Burns, PhD, MT-BC

BUSINESS ADDRESS:

Purdue School of Engineering and Technology @ IUPUI
Department of Music and Arts Technology
535 W. Michigan St., ICTC 379
Indianapolis, IN 46202

Phone: 317-278-2014

Fax: 317-278-2590

E-mail: desburns@iupui.edu

EDUCATION:

Institution	Degree	Date Awarded
Indiana University School of Nursing Indiana University School of Medicine/IU Simon Cancer Center Indianapolis, IN	Post-doctoral Fellowship in Behavioral Oncology NIH F32 AT001144 Mentors: Dr. Victoria Champion, DNS, FAAN Dr. Larry D. Cripe, MD	2002-2005
IU School of Nursing Indianapolis, IN	Post-doctoral Fellowship in Behavioral Oncology/Cancer Control Walther Cancer Institute/Behavioral Oncology Cooperative Group	2000-2002
University of Kansas Lawrence, KS	Doctor of Philosophy in Music Education/ Music Therapy	1999
Illinois State University, IL	Masters of Music in Music Therapy	1991
Glenville State College, WV	Bachelor of Arts in Music Education	1987

ACADEMIC APPOINTMENTS:

Institution	Rank/Title	Inclusive Dates
Purdue School of Engineering and Technology @ IUPUI Indianapolis, IN	Chair, Department of Music and Arts Technology	June 1, 2014 - Present
Purdue School of Engineering and Technology @ IUPUI Indianapolis, IN	Interim Associate Dean for Research	July 1, 2013-June 30, 2014
Purdue School of Engineering and Technology @ IUPUI Indianapolis, IN	Associate Professor Tenure Granted	2011 - Present
Purdue School of Engineering and Technology @ IUPUI Indianapolis, IN	Assistant Professor	2005-2011
St. Mary of the Woods College	Adjunct Professor	2002-2003
Indiana University School of Nursing Indianapolis, IN	Assistant Research Scientist	2001-2003
Indiana University School of Nursing Indianapolis, IN	Research Project Coordinator	2001-2002
University of Kansas Lawrence, KS	Graduate Teaching Assistant	1996-1999
Illinois State University Normal, IL	Graduate Teaching Assistant	1998-1990

CLINICAL APPOINTMENTS:

Institution/Entity	Title	Inclusive Dates
Community Cancer Care	Research Assistant	1999-2000
Via Christi Regional Medical Center	Board-Certified Music Therapist	1993-1996
BroMenn Regional Medical Center	Board-Certified Music Therapist	1991-1993

CERTIFICATIONS:

Credential	Number	Organization	Inclusive Dates
Board Certified Music Therapist (MT-BC)	#04036	Certification Board for Music Therapists	1992-present

PROFESSIONAL ORGANIZATIONS:

Organization	Role	Inclusive Dates
American Music Therapy Association (AMTA)	Professional Member	1991 - Present
Children's Oncology Group (COG)	Member	2006 - Present
IU Simon Cancer Center/Cancer Control & Population Sciences Program	Member	2004 - Present

PROFESSIONAL HONORS AND AWARDS:**TEACHING**

Award Name	Granted By	Year Awarded
Trustees Teaching Award	Indiana University Board of Trustees	2009

RESEARCH

Award Name	Granted By	Year Awarded
Abraham M. Max Distinguished Professor Award	Purdue School of Engineering and Technology @ IUPUI	2011
National Research/Publications Award	American Music Therapy Association	2010
Innovative Research Award	IU School of Music Program @ IUPUI	2008
Innovative Research Award	IU School of Music Program @ IUPUI	2006
Scholarly Activity Award	Great Lakes Region, AMTA	2006

GENERAL

Outstanding Young Alumnus	Glenville State College	2009
Outstanding Alumnus	School of Music, Illinois State University	2005

RESEARCH ACTIVITY:

RESEARCH INTEREST: Development and evaluation of music-based interventions and behavioral interventions to improve health outcomes such as quality of life, symptom distress, and resilience in adult cancer patients, cancer survivors, and individuals at the end of life using mixed method designs.

AWARDED GRANTS/FELLOWSHIPS

Title	Granting Agency	Role (% Effort)	Award Amount	Inclusive Dates
Mixed Methods Research Training Program for the Health Sciences	National Institutes of Health	Consultant PI: Gallo (Johns Hopkins)		2014-2018

Developing a music therapy intervention to manage compassion fatigue in professional caregivers	Kulas Foundation	Consultant	\$27,756	2014-2015
		PI: Schroth (Malachi House)		
Mixed Methods Research in Technology and Health Graduate Certificate	CTL Curriculum Enhancement Grant	Co-PI	\$7500.00	2013-2014
Characterizing music therapy use during for-profit hospice care	Mary Margaret Walther Program in Palliative Care Research and Education, IU Simon Cancer Center	Co-PI: Feldhaus Principal Investigator	\$25,000	2011-2013
Using binaural beat technology to enhance post deployment wellness for warriors	TriService Nursing Research Program Novice Investigator Award	Consultant	\$5,000	2012-2015
		PI: Gantt (Ft. Belvoir)		
Palliative Cancer Care: Music Video for AYA-Parent Communication and Resilience	NIH/NCI R01 CA162181-05	Co-Investigator (15%) MPI: Haase & Robb	\$3,053,568	2011 - 2015
Palliative Cancer Care: Music Video for AYA-Parent Communication and Resilience	Children's Oncology Group ANUR1131 U10 CA098543 & U10 CA095861	Study Member Chairs: Haase/Robb	CC Credits: \$396,000	2011 – Open
Listening and locating: Understanding the benefits of music imagery experiences during chemotherapy infusion.	Arthur Flagler Fultz Award/American Music Therapy Association	Co-Principal Investigator w/ Meadows	\$10,000	2009-2013
Breathe-Intervention for Hot Flashes, Interference, and Associated Outcomes	R01 CA132927	Co-Investigator, (15%) PI: Carpenter	\$1,252,996	2008-2012
MSI-FLASH: Paced respiration for breast cancer survivors	5U01 AG032659	Co-Investigator (10%) PI: Carpenter	\$1,000,000	2009 - 2011
The effects of adjuvant chemotherapy on music perception in breast cancer patients with and without cognitive dysfunction.	Mary Margaret Walther Program for Cancer Care, Walther Cancer Institute	Principal Investigator	\$30,000	2007 - 2009
Music Video and Adolescent Resilience During Transplant	NIH/NINR/NCI R01 NR008583 U10 CA098543	Co-Investigator (15%) PI: Haase	\$2,048,045	2005 - 2011
Music Video and Adolescent Resilience During Transplant	NCI/COG ANUR 0631	Study Member Chairs: Haase/Robb	\$380,000	2006 - 2011

SUBMITTED RESEARCH GRANTS

Title	Granting Agency	Role (% Effort)	Award Amount	Status
A mixed methods study of vocal music therapy for resilience in women with gynecological cancer	Drexel University subcontract/NINR/NIH	Co-Investigator (15%) PI: Bradt	\$20,780	Unfunded
The impact of music therapy on patient level outcomes and quality hospice indicators	NINR/NIH	Principal Investigator (15%)	\$153,000	Scores 37/20, Unfunded

Music, cognition, and neural structures in long-term breast cancer survivors	NCI/NIH	Principal Investigator (15%)	\$100,000	Unfunded
Music imagery efficacy and moderators during treatment for hematologic malignancies	NCCAM/NIH	Principal Investigator (40%)	\$2,500,000	Unfunded
Exploring Guided Imagery and Music to decrease traumatic stress symptoms	NCCAM/NCI/NIH	Principal Investigator (30%)	\$400,000	Unfunded

PUBLICATIONS:

(*Invited publication)

Peer-Reviewed Publications

- Carpenter JS, Igega CM, Otte JL, **Burns DS**, Yu M, Wu J (2014). Somatosensory amplification and menopausal symptoms in breast cancer survivors and midlife women. *Maturitas*. [epub ahead of print] doi: 10.1016/j.maturitas.2014.02.006
- Robb SL, **Burns DS**, Stegenga KA, Haut PR, Monahan PO, Meza J, Stump TE, Cherven BO, Docherty SL, Hendricks-Ferguson VL, Kintner EK, Haight AE, Wall DA, & Haase JE (Jan 27, 2014). Randomized Clinical Trial of Therapeutic Music Video Intervention for Resilience Outcomes in Adolescents/Young Adults Undergoing Hematopoietic Stem Cell Transplant: A Report from the Children's Oncology Group. *Cancer*. [epub ahead of print] doi: 10.1002/cncr.28355
- *Bradt, J, **Burns DS**, & Creswell JW (2013). Mixed methods research in music therapy research. *Journal of Music Therapy*, 50 (2), 123-148.
- Otte JL, Skaar T, Wu J, Yu M, Ryker K, **Burns DS**, & Carpenter JS (2013). Self-reported medication and supplement use in breast cancer survivors compared to midlife women. *Supportive Care in Cancer*, 21(7), 1827-33. doi: 10.1007/s00520-013-1727-5
- *Fisher WI, Johnson AK, Elkins G, Otte, JL, Yu M, **Burns DS**, & Carpenter JS (2013). Risk factors, pathophysiology, and treatment of hot flashes in cancer. *CA: A Cancer Journal for Clinicians*, 63(3), 167-92. doi: 10.3322/caac.21171.
- Burns DS**, Drews MR, & Carpenter JS (2013). Description of an audio-based paced respiration intervention for vasomotor symptoms. *Music and Medicine*, 5(1), 8-14. doi:10.1177/1943862112470461
- Carpenter JS, **Burns DS**, Wu J, Yu M, Ryker K, Tallman E, & Von Ah D (2013). Strategies used and data obtained during treatment fidelity monitoring. *Nursing Research*, 62(1) 59-65. doi:10.1097/NNR.0b013e31827614fd PMID: 23222844, PMCID: PMC3523275.
- Carpenter JS, **Burns DS**, Wu J, Otte J, Schneider B, Ryker K, Tallman E, & Yu M (2013). Randomized, controlled trial of paced respiration for vasomotor and other menopausal symptoms. *Journal of General Internal Medicine*, 28 (2), 193-200. doi: 10.1007/s11606-012-2202-6
- Yu M, Wu J, **Burns DS**, & Carpenter JS (2012). Designing cost-efficient randomized trials by using flexible recruitment strategies. *BMC Medical Research Methodology*, 12:106. doi:10.1186/1471-2288/12/106
- Carpenter JS, Wu J, **Burns DS**, Schneider BP, Yu M (2012). Perceived control and hot flashes in treatment-seeking breast cancer survivors and menopausal women. *Cancer Nursing: An International Journal of Cancer Care*, 35(3), 195-202. doi: 10.1097/NCC.0b013e31822e78eb, PMCID: PMC3248957
- ***Burns DS** & Carpenter JS (2012). Paced respiration for hot flashes? *The Female Patient*, 37 (July/August), 38-45.
- Hendricks-Ferguson VL, Cherven BO, **Burns DS**, Docherty SL, Phillips-Salimi CR, Roll L . . . Haase JE (2012). Recruitment strategies and rates of a multi-site behavioral intervention for adolescents and young adults with cancer. *Journal of Pediatric Health Care*. doi: 10.1016/j.pedhc.2012.04.010
- ***Burns DS** (2012). Theoretical rationale for music selection in oncology intervention research: An integrative review. *Journal of Music Therapy*, 49(1), 7-22.
- *Robb SL, **Burns DS**, Carpenter JS (2011). Reporting guidelines for music-based interventions. *Journal of Health Psychology*, 16(2), 342-352. doi:10.1177/1359105310374781. PMCID: PMC3141224. Reprinted (2011) in *Music and Medicine*, 3(4), 271-279. doi:10.1177/1943862111420539.
- Burns DS**, Bergeson, TR, Perkins SM, McDonald BC, Saykin AJ, Unverzagt FW, Champion VL (2011). Music cognition in breast cancer survivors. *Music and Medicine*, 3(4), 258-263. doi: 10.1177/1943862111414434
- Musick BS, Robb SL, **Burns DS**, Stegenga, KS, Yan M, McCorkle K, Haase, JE (2011). The development and use of a web-based data management system for a randomized clinical trial of adolescents and young

- adults. *CIN: Computers, Informatics, Nursing*, 29(6), 337-343. doi:10.1097/NCN.0b013e3181fcbc95. PMID: 21116183
- Robb SL, **Burns DS**, Docherty S & Haase JE (2010). Ensuring treatment fidelity in a multi-site behavioral intervention study: Implementing NIH Behavior Change Consortium Recommendations in the SMART Trial. *Psycho-Oncology*, n/a. doi: 10.1002/pon.1845
- Burns DS**, Robb SL, Phillips-Salimi, CR, Haase, JE (2010). Parental perspectives of Adolescent/Young Adult Stem Cell Transplant and a Music Video Intervention. *Cancer Nursing*, 33(4), E20 – 27.
- Burns DS**, Robb SL, Haase JE (2009). The feasibility of a music video intervention for adolescents and young adults undergoing stem cell transplant. *Cancer Nursing: An International Journal of Cancer Care*, 32(5 Sept/Oct), E8-E15. PMID: 19661790
- Burns DS**, Azzouz F, Sledge RB, Monahan PO, Cripe LD (2008). Music imagery for adults with acute leukemia in protective environments: a feasibility study. *Supportive Care in Cancer*, 16(5):507-513.
- Monahan PO, Champion VL, Rawl SM, Giesler RB, Given B, Given CW, **Burns DS**, Bigatti S, Reuille KM, Azzouz F, Wu J, Koch M (2007). What contributes more strongly to predicting QOL during 1-year recovery from treatment for clinically localized prostate cancer: 4-weeks-post-treatment depressive symptoms or type of treatment? *Quality of Life Research*. 16(3):399-411.
- Giesler RB, Champion VL, Monahan PO, **Burns DS**, Rawl SM, Reuille KM, Given CW, Given B. (2005). Improving the quality of life of prostate cancer patients: a randomized trial testing the efficacy of a nurse-driven intervention. *Cancer*, 104, 752-762.
- Burns DS**, Maddux RB, Fuller, LA, Daggy J, Monahan PO. (2005). Cancer patients' interest and preferences for music therapy. *Journal of Music Therapy*, 42, 185-199.
- Burns DS** (2001). The effect of the Bonny Method of Guided Imagery and Music on the mood and life quality of cancer patients. *Journal of Music Therapy*, 38, 51-65.

Books & Book Chapters

- Burns, DS. (In progress, due May 30, 2014). Mixing Objectivist and Reflexive Methods. In B. Wheeler (Ed.), *Music Therapy Research*, (3rd edition). Gilsum, NH: Barcelona Press.
- Robb, SL & **Burns DS** (Submitted, 3/10/2014). Randomized Controlled Trials in Music Therapy Research. In J. Edwards (Ed.), *Music Therapy (working title)*. London: Oxford Press.
- Burns DS** & Meadows A. (In press, 2015). Music Therapy Research. In B. Wheeler (Ed.), *Music Therapy Handbook (working title)*. NY: Gilford Publications, Inc.
- Burns DS** & Woolrich J (2008). The Bonny method of guided imagery in music. In AA Darrow (Ed.), *Introduction to Approaches in Music Therapy (2nd Ed.)* (pp. 49-59). Silver Spring, MD: American Music Therapy Association.
- Burns DS** & Robb SL (2006). Music Therapy. In C Yuan, EJ Bieber, BA Bauer (Eds.), *Textbook of Complementary and Alternative Medicine. (2nd Ed.)*(pp. 271-280). Taylor and Francis.
- Edwards J & **Burns DS** (2005). Funding music therapy research. In B.L. Wheeler (Ed.). *Music Therapy Research. (2nd Ed.)*.(pp. 72-77) Gilsum, NH: Barcelona Publishers.
- de l'Etoile S, Robb SL, Schunk, H, & **Burns DS** (2001). Future directions in music therapy: Towards a training model of clinical supervision. In **DS Burns** & K Harding (Eds.). *Contemporary practice and future trends in music therapy: A celebration of fifty years of music therapy at the University of Kansas* (pp. 52 – 61). Lawrence, KS: University of Kansas Printing Service.

Published Abstracts

- Burns DS**, Bergeson TR, Unverzagt FW, & Champion VL (2009 July). Music perception and self-reported memory in breast cancer survivors. Abstract. *Supportive Care in Cancer*, 17 (7): 1024-1025.
- Haase JE, Robb SL, **Burns DS**, Stegenga K, Haut PR, & Rimkus C. (2009 February). Stories and music for adolescent/young adults: Resilience during transplant. Abstract. *Biology of Blood and Marrow Transplantation*, 15(2, Supplement 1); 31-32.
- Schoonveld G, Cripe LD, **Burns DS**, et al. (2007). Evaluating the correlation of staff perceptions of collaboration and patient satisfaction on two medical services: malignant hematology and oncology patient population. Abstract. *Oncology Nursing Forum*, 34:518.
- Burns DS**, Haase JE, Robb SL, Phillips CR, Bell CJ (2006). Messages in the music: AYA and parent perspectives of the TMV intervention. Abstract. *Psycho-Oncology*, 15(2), S49.
- McCorkle K, Haase, JE, Robb SL, **Burns DS**, Hendricks-Ferguson, VL, Kintner, E, Roll L, Siarkowski-Amer, K (2006). A Description of Local IRB Variation and its Impact on the Start-up of a Multi-Site Behavioral Oncology Trial. Abstract. *Psycho-Oncology (15) S1*, 59-60.

Haase, JE, **Burns DS**, Robb SL, Bell CJ, Phillips CR (2005). Evaluation of a music therapy intervention for adolescents/young adults undergoing stem cell transplant. Abstract. *Pediatric Blood and Cancer*.

PRESENTATIONS – REFEREED:

(*Paper, #Poster, §Symposium, **Student Presenter)

LOCAL

- #Hedrick D, Banno D, Rand KL, **Burns DS**, Cottingham A, Litzelman D, Cripe LD, Hoffman ML, & Frankel RM (March 7, 2014). Positive influence of the “hidden” curriculum on medical students’ experience of death, dying, and palliative care. Research Poster. RESPECT Center Palliative Care Conference, Carmel, IN.
- ***Brown C, **Burns DS**, Haase, J.E. & Robb SL (August, 2004). The Assessment of Song Lyrics in the Therapeutic Music Video Program. 2004 Indiana University Cancer Center Summer Research Program Poster Presentations, Indianapolis, IN.

REGIONAL

- *Robb SL, **Burns DS**, Docherty, SL, Haase, JE (April, 2010). *Ensuring treatment fidelity in a multi-site behavioral intervention study: Implementing NIH Behavior Change Consortium Recommendations in the SMART Trial*. Research Podium Presentation for the Midwest Nursing Research Society Annual Research Conference, Kansas City, MO.
- #Robb SL & **Burns DS** (April, 2008). *Music-Based Interventions in Oncology: Standardization of Intervention-Specific Variables to Improve Translation of Research into Practice*. Poster Presentation, 2008 Great Lake Region and Mid-Western Regional Joint Conference, Chicago, IL.
- *Hendricks-Ferguson VL, Oakley B, Haase JE, **Burns DS**, Robb SL & Stegenga K (March, 2008). Planning, implementing, and monitoring strategies for recruitment of adolescents/young adults into a randomized clinical trial. 32nd Annual Midwest Nursing Research Society Conference, Indianapolis, IN.
- *Robb SL, Leonardi, J, **Burns DS**, Haase JE (April, 2005). *Parental Perspectives on a Therapeutic Music Video Production Intervention for Adolescents and Young Adults Receiving Stem Cell Transplantation*. Research session presented during the AMTA Midwestern Regional Conference, Lawrence, Kansas.
- *Robb SL, **Burns DS**, Clair AA, Abromeit DH, & Tuden C (April, 2004). *Coping Strategies Across the Life-Span: Implications for Clinical Practice*. Research Session presented during the AMTA Midwestern Regional Conference, Ft. Collins, CO.
- *Robb SL, **Burns DS**, & de l'Etoile S (April, 1998). *Facilitation of Self-Evaluation Skills in Practicum Students through Music Listening*. Paper presented at the Midwestern Regional Music Therapy Conference, St. Louis, MO.
- #Robb SL, **Burns DS**, & de l'Etoile, S (February, 1998). *Facilitation of Self-Evaluation Skills in Practicum Students through Music Listening*. Poster session presented at the Kansas Music Educators Association Annual Conference, Wichita, KS.

NATIONAL

- #**Burns DS**, Perkins SM, **Tyson II AB, Bergeson TR, Saykin AJ, McDonald BC, Unverzagt FW, Champion VL (October, 2012). Differential relationships between music perception and cognitive domains in breast cancer survivors and healthy controls. Poster presentation for the 2012 Conference of the American Music Therapy Association, St. Charles, IL.
- ***Burns DS** & Robb SL (October, 2012). Theory-based research and clinically-relevant practice knowledge: Are we falling short? Presentation for the 2012 Conference of the American Music Therapy Association, St. Charles, IL.
- ***Burns DS** & Hilliard RE (October, 2012). Leveraging academic/industry partnerships to conduct high-impact hospice music therapy research. Presentation for the 2012 Conference of the American Music Therapy Association, St. Charles, IL.
- §Bradt J & **Burns DS** (October, 2012). Music Therapy Research in Hospice. In R. E. Hilliard, N. Wlodarczyk, L. DiMaio (Co-Chairs). *Hospice Music Therapy: Current Trends in Practice*. Pre-Conference Institute. 2012 Conference of the American Music Therapy Association, St. Charles, IL.
- *Carpenter, JS, **Burns DS**, Ryker K, Wu J, Yu M, Tallman E, & Von Ah D (September, 2012). Treatment fidelity monitoring: Strategies and data. Council for the Advancement of Nursing Science State of the Science Congress on Nursing Research, Washington, D.C.
- ***Tyson AB, **Burns DS**, Bergeson TR, Perkins SM, Unverzagt FW, Champion VL (November 2011). The relationships between music perception and cognitive domains in breast cancer survivors. Poster for the 2011 Conference of the American Music Therapy Association, Atlanta, GA.

- #Carpenter, JS, **Burns DS**, Schneider B, Yu M, & Wu J (February, 2011). Breathe-intervention for hot flashes, interference, and associated outcomes. 11th National Conference on Cancer Nursing Research, Los Angeles, CA.
- *Robb SL, **Burns DS**, Carpenter JS. (November, 2010). *They Did What? Reporting Guidelines to Improve the Science and Practice of Music Therapy*. Presentation for the American Music Therapy Association National Conference, Cleveland, OH.
- Ropp, CR & **Burns, DS** (November, 2010). *Music therapy educators' focus group*. 2010 Annual American Music Therapy Association National Conference, Cleveland, OH.
- ***Burns DS**, Stegenga K, Robb SL, Haase JE (November, 2010). *Toward a third research paradigm: Mixed methods to inform theory and practice*. Presentation for the American Music Therapy Association National Conference, Cleveland, OH.
- #Robb SL, **Burns DS**, Docherty SL, Haase JE (April, 2010). *Ensuring Treatment Fidelity in a Multi-site Behavioral Intervention Study: Implementing NIH Behavior Change Consortium Recommendations in the SMART Trial*. Research Poster Session at the Indiana University Simon Cancer Center Research Day, Indianapolis, IN.
- #Robb SL, **Burns DS**, Docherty, SL, Haase, JE (April, 2010). *Ensuring Treatment Fidelity in a Multi-site Behavioral Intervention Study: Implementing NIH Behavior Change Consortium Recommendations in the SMART Trial*. Research Poster Session at the Clinical and Translational Research and Education Meeting. ACRT/SCTS Joint Annual Meeting, Washington, DC.
- #Robb SL, **Burns DS**, Docherty, SL, Haase, JE (November, 2009). *Ensuring Treatment Fidelity in a Multi-site Behavioral Intervention Study: Implementing NIH Behavior Change Consortium Recommendations in the SMART Trial*. Research Poster Session at the American Music Therapy Association National Conference, San Diego, CA.
- #Robb SL, **Burns DS**, Haase JE (November, 2009). *Researchers and Clinicians Engaged in SMART Quality Assurance Monitoring*. Research Poster Session at the American Music Therapy Association National Conference, San Diego, CA.
- ***Burns DS**, Bergeson-Dana TR, Schneider B, Unverzagt FW, & Champion VL (August, 2009). *The relationship between music perception and self-reported memory in breast cancer survivors*. Paper presentation at the Society for Music Perception and Cognition Biennial Conference, Indianapolis, IN.
- #Robb SL, **Burns DS**, Haase, J. (February, 2009). *Researchers and Clinicians Engaged in SMART Quality Assurance Monitoring*. Research Poster for the American Psychosocial Oncology Society National Conference, Charlotte, North Carolina.
- *#Haase, JE, Robb SL, **Burns DS**, Stegenga, K, Haut, P, Rimkus, C. (February, 2009). *Stories and Music for Adolescent/Young Adult: Resilience During Transplant*. Poster and Podium Presentation. ASBMT/CIBMTR Tandem Transplant Meeting. Tampa, FL.
- §**Robb SL**, Burns DS, Haase, JE (November, 2008). *Worldviews, Research, and Clinical Practice*. Invited 5-hour Continuing Education Course for the American Music Therapy Association National Conference, St. Louis, Missouri.
- ***Robb SL**, Burns DS, Phillips, S, Weaver, C, Robertson, K, Stephens, L, Story, M, Beauchamp, V, Norris, A, Snyder, C, Chandler, A, Batson, T, Hong, A, Kwoun, S, Norvell, K, Williams, S, Jurisa, S (November, 2008). *Clinicians engaged in research: Experiences in protocol delivery, quality assurance monitoring, and intervention tailoring*. Research Presentation for the American Music Therapy Association National Conference, St. Louis, Missouri.
- Burns DS**, **Story KM, **Booth K, **Lyons K, **Lai C, **Barthelman L. (November, 2008). *Gateway to graduate studies: Students demystify web-based learning*. Concurrent Session. 10th Annual American Music Therapy Association National Conference, St. Louis, MO.
- *Hendricks-Ferguson VL, Oakley B, **Burns DS**, Roll L, Stegenga K, Docherty SL, & Haase JE (2008). *Planning, implementing, and monitoring strategies for recruitment of adolescents/young adults into a randomized clinical trial*. Midwest Nursing Research Society 32nd Annual Research Conference, Indianapolis, IN.
- #Robb SL & **Burns DS** (October, 2007). *Music-Based Interventions in Oncology: Standardization of Intervention-Specific Variables to Improve Translation of Research into Practice*. Poster presentation, Researcher-Practitioners Collaboration Conference. Office of Cancer Complementary and Alternative Medicine, National Cancer Institute, Bethesda, MD.
- #**Burns DS**, Robb SL, Haut, P, Haase, JE (October, 2007). *Lessons Learned from the Interdisciplinary Collaboration to Implement a Music Therapy Intervention with a Cooperative Group*. Poster presentation, Researcher-Practitioners Collaboration Conference. OCCAM, NCI, Bethesda, MD.

- §**Burns DS** & Robb SL (November, 2006). *Music Therapy and Oncology: Integrating Science and Practice through Collaboration*. Co-Chair, Pre-Conference Institute for the American Music Therapy Association National Conference, Kansas City, Kansas.
- #McCorkle K, Haase JE, Robb SL, **Burns DS**, Hendricks-Ferguson, VL, Kintner E, Roll, L, Siarkowski-Amer, K. (February, 2006). *A Description of Local IRB Variation and Its Impact on a Multi-Site Behavioral Oncology Trial*. Research Poster Presentation for American Psycho-Social Oncology Society 3rd Annual Conference, Amelia Island, Florida.
- #**Burns DS**, Robb SL, Phillips, C., Bell, C, Haase, J.E. (November, 2005). *Parent Perspectives on Music Video Intervention for Adolescents and Young Adults Receiving Stem Cell Transplant*. Research Poster presented during the AMTA National Conference, Orlando, Florida.
- ***Burns DS**, Robb SL, Phillips, CR, Bell, C, Haase, JE (November, 2005). *Parental Perspectives on a Therapeutic Music Video Production Intervention for Adolescents and Young Adults Undergoing Stem Cell Transplant*. Research Session presented during the AMTA National Conference, Orlando, Florida.
- ***Burns DS**, Robb SL, Haase, JE, Hannan, A., Maddux, RB, Phillips, CR (November, 2003). *Music Video Intervention for Adolescent/Young Adults Undergoing Stem Cell Transplantation – Phase 2*. Research Session presented during the American Music Therapy Association National Conference, Minneapolis, Minnesota.
- #**Burns DS**, Haase, JE, Robb SL, Maddux R B, Hannan A, Phillips CR & Stancombe K. (October, 2003). *A Pilot Study of Therapeutic Music Video Production Intervention for Resilience and Quality of Life in Adolescents/Young Adults Undergoing Stem Cell Transplant, Phase II*. Research Poster Session presented during the Association of Pediatric Oncology Nurses National Conference, Philadelphia, Pennsylvania.
- *Robb SL, **Burns DS**, & de l'Etoile, S (November 1998). *Facilitation of Self-Evaluation Skills in Practicum Students through Music Listening*. National Association for Music Therapy Annual Conference, Los Angeles, California.

INTERNATIONAL

- ***Burns, DS** (May, 2013). *Developing and indigenous theory of music therapy in hospice: A grounded theory study*. 9th International Congress of Qualitative Inquiry, Urbana-Champaign, IL.
- ***Burns, DS** (May, 2013). *Reverse translation – understanding current music therapy clinical practice and hospice outcomes through mixed methods research*. 9th International Congress of Qualitative Inquiry, Urbana-Champaign, IL.
- #Carpenter JS, **Burns DS**, Schneider B, Yu M, & Wu J (June, 2011). *Breathe-intervention for hot flashes, interference, and associated outcomes*. 13th World Congress on Menopause, Rome, Italy.
- §Carpenter JS, Wu J, **Burns DS**, Yu M, & Schneider B (June, 2011). *Perceived Control and Hot Flashes in Treatment-seeking Breast Cancer Survivors and Menopausal Women*. Abstract for Symposium: Ayers, B. The role of cognitive and behavioural factors in hot flush experience. 13th World Congress on Menopause, Rome, Italy.
- #Robb SL, **Burns DS**, Carpenter, JS (October, 2010). *Music-based Intervention Reporting Guidelines to Improve Research and Clinical Practice in Pediatric Oncology*. Poster Presentation for the 42nd Congress of the International Society of Paediatric Oncology. Boston, United States.
- *Oakley, B, Hendricks-Ferguson, V, **Burns DS**, Roll, L, Stegenga, K, Docherty, S, **Robb SL**, Haase, JE (March, 2010). *Recruiting Adolescents and Young Adults with Cancer into a Phase II Behavioral Intervention Study*. Presentation Session at the 16th International Conference on Cancer Nursing, Atlanta, GA.
- #Stegenga K, Robb SL, **Burns DS**, Haase JE (October, 2009). *Synergistic Use of Qualitative and Quantitative Approaches to Inform Behavioral Oncology Interventions*. Poster Presentation for the International Institute for Qualitative Methodologies 10th Advances in Qualitative Methods Conference, Vancouver, British Columbia.
- *§Haase JE, Robb SL, **Burns DS**, Haut P, McCorkle K, Musick B. (October, 2006). *Music therapy video for adolescents/young adults (AYA) undergoing stem cell transplant (SCT)*. Symposium presentation at the 8th World Congress of Psycho-Oncology, Venice, Italy.
- *§**Burns DS**, Haase, JE, Robb SL, Phillips, CR, Bell, C. (October, 2006). *Symposium Paper: Messages in the music: AYA and parent perspectives of the TMV intervention*. International Psycho-Oncology Society (IPOS). 8th World Congress, Venice, Italy.
- *§Haut, P, Haase, JE, Robb SL, **Burns, DS**, Roll, L, Stegenga, K, McCorkle, K, et al (October, 2006). *Symposium Paper: Lessons learned from interdisciplinary collaboration to implement a behavioral intervention within a cooperative group*. International Psycho-Oncology Society (IPOS). 8th World Congress, Venice, Italy.

- *Haase JE, Phillips CR, Bell C, **Burns DS**, & Robb SL (August, 2005). *Evaluation of a therapeutic music video intervention to enhance resilience in adolescents and young adults undergoing stem cell transplant*. Paper presentation for the International Pediatric Transplant Association 3rd World Congress, Innsbruck, Austria.
- *Haase, JE, **Burns DS**, Robb SL, Bell, CJ, Phillips, CR (September, 2005). *Evaluation of a music therapy intervention for adolescents/young adults undergoing stem cell transplant*. Paper presentation for the 37th Congress of the International Society of Pediatric Oncology. Vancouver, Canada.
- §Haase JE, **Burns DS**, & Robb SL (August, 2004). *Symposium: Technological Innovations in Cancer Nursing Research. #4: Using Technology with Adolescents Evaluation and Intervention of a Therapeutic Music Video for Enhancing Resilience and Quality of Life*. Celebrating Diversity' - 13th International Conference on Cancer Nursing. Sydney, Australia.

PRESENTATIONS - Invited

(**Student Presenter)

LOCAL

Robb SL, Burns DS, Stegenga, KS, Haut, P, Stump, T, Monahan, P, Haase, JE (November, 2011). *Efficacy of a Therapeutic Music Video Intervention on Resilience in Illness Outcomes for Adolescent/Young Adults undergoing Stem Cell Transplant*. Invited Presentation for Indiana University Cancer Control, IU Simon Cancer Center, Indianapolis, IN.

REGIONAL

- Burns, DS** (April 2014). *Gaining perspective and momentum: The value of team science*. Invited concurrent session for the Mid-Atlantic Region of the American Music Therapy Association annual conference April 10-12, Buffalo, NY.
- Burns, DS** (April 2014). *Carrying out a music therapy program of research: From pilot to RCT*. Invited concurrent session for the Mid-Atlantic Region of the American Music Therapy Association annual conference April 10-12, Buffalo, NY.
- §**Burns, DS** (April 2014). *Writing grant applications for music therapy research*. Invited 5-hour Continuing Music Therapy Education for the Midwest Regional of the American Music Therapy Association annual conference. April 4, 2014.
- Burns DS** (September, 2011). *Music: Ubiquitous and pervasive but is it therapeutic?* Western Michigan University Medical Humanities Conference. Kalamazoo, MI.
- §**Burns DS** (March, 2007). *Writing proposals for research funding*. 5-hour Continuing Music Therapy Education Workshop. AMTA Great Lakes Regional Conference, Independence, OH.

NATIONAL

- Burns DS** & Meadows A. (November, 2011) *AMTA Research Committee Presents: Integrating Perspectives to Enhance Research and Clinical Practice*. Invited Concurrent Session. 2011 Annual Conference of the American Music Therapy Association, Atlanta, GA.
- §**Burns DS** & Else BA (November, 2010). *Making research relevant in music therapy practice and advocacy*. 6 hour CMTE Institute. 2010 Annual Conference of the American Music Therapy Association, Cleveland, OH.
- **Mauskapf PM, Drews MR, & **Burns DS** (November, 2010). *AMTA Technology Committee Presents: Interactive music technology to break down therapeutic barriers*. Concurrent Session. 2010 Annual Conference of the American Music Therapy Association, Cleveland, OH.
- Robb SL, **Burns DS**, Docherty SL, Haase JE (November, 2010). *Research Committee Presents: Conducting behavioral intervention research in clinical settings – it's messy out there!* Invited Podium Presentation for the American Music Therapy Association National Conference, Cleveland, OH.
- Burns DS** & Colwell CM (November, 2009). *Research Committee Presents: To Consent or Not to Consent: When am I doing research and what does that mean?* Concurrent Session. 2009 Annual Conference of the American Music Therapy Association, San Diego, CA.
- §**Burns DS**, Haase JE, & Robb SL (November, 2008). *Worldviews, Research, and Clinical Practice*. 5 hour Continuing Music Therapy Education. 10th Annual American Music Therapy Association National Conference, St. Louis, MO.
- Kay LD, **Burns DS**, Keith DR, Lee CS, Richardson TG, Vega VP (November, 2007). *On-line and distance learning in music therapy education: Undergraduate and graduate perspectives*. Concurrent Session. 9th Annual American Music Therapy Association National Conference, Louisville, KY.

Burns DS, Darrow AA, Hunter B, & Robb SL (November, 2006). *Writing proposals for research funding*. Panelist for Continuing Education Course for the American Music Therapy Association National Conference, Kansas City, Kansas.

Burns DS, Robb SL, Cripe LD, Haase JE, Leonardi J, Munch K, Stegenga K (November, 2006). *Music therapy and oncology: Integrating science and practice through collaboration*. Preconference Institute. 8th Annual American Music Therapy Association National Conference, Kansas City, MO.

Burns DS & Nardo RL (November, 2005). *Going Digital: Software Tools for Mac and PC. Concurrent Session*. 7th Annual American Music Therapy Association National Conference, Orlando, FL

Phillips CR, Haase, JE, **Burns DS**, & Robb SL (October, 2003). *Pilot study music video intervention for adolescents/young adults undergoing stem cell transplant*. 27th APON conference, Philadelphia, PA.

INTERNATIONAL

Burns DS, Loewy JV, Lane D (July, 2011). *Singapore's 1st Music and Health Symposium*. Khoo Teck Puat Hospital, Kadang Kerbau Women's & Children's Hospital, Tan Tock Seng Hospital, Singapore.

Magill L, O'Callaghan C, **Burns DS**, Tusek G, et al (July, 2011) *Music Therapy and Oncology*. World Congress in Music Therapy, Pre-Congress Seminar. Seoul South Korea

Burns DS, Stegenga, K, Robb SL, Haase, JE (March, 2010). *Researching in High-Definition: Integrating qualitative and quantitative data to gain a deeper understanding of a music video intervention*. Invited Podium Presentation for the International Symposium of Music Therapy in Supportive Cancer Care, Windsor, Ontario, Canada.

Robb SL, **Burns DS**, Docherty, SL, Haase, JE. (March, 2010). *Ensuring treatment fidelity in a multi-site behavioral intervention study: Implementing NIH Behavior Change Consortium Recommendations in the SMART Trial*. Invited Podium Presentation for the International Symposium of Music Therapy in Supportive Cancer Care, Windsor, Ontario, Canada.

TEACHING:

UNDERGRADUATE/EQUIVALENCY

(Indiana University – Purdue University in Indianapolis)

Course Number	CR	Title	Format	Role
MUS L153	3	Introduction to Music Therapy	Lecture	Course Director
MUS L253	1	Music Therapy Observation Practicum	Clinic/Lab	Course Director
MUS L254	1	Music Therapy Practicum I	Clinic/Lab	Course Director
MUS L353	1	Music Therapy Practicum II	Clinic/Lab	Course Director
MUS L354	1	Music Therapy Practicum III	Clinic/Lab	Course Director
MUS L421	1	Music Therapy Practicum IV	Clinic/Lab	Course Director
MUS L424	2	Music Therapy Internship	Clinic/Lab	Course Director
MUS L340	3	Music Therapy in Healthcare	Lecture	Course Director
MUS U355	4	Music and Exceptionality	Lecture/Lab	Course Director
MUS 410	3	Admn & Prof Issues in Music Therapy	Lecture	Course Director
MUS L418	3	Psychology of Music	Lecture	Course Director
MUS L419	3	Intro to Music Therapy Rsrch Methods	Lecture	Course Director
MUS L420	3	Clinical Processes in Music Therapy	Lecture	Course Director
MUS L422	3	Theoretical Foundations of Music Therapy	Lecture	Course Director
MUS U410	3	Creative Arts, Health & Wellness	Ind. Study	Mentor

GRADUATE

(Indiana University-Purdue University in Indianapolis)

Course Number	Credits	Short Title	Format	Role
MUS N532	3	Music in Medicine	Lecture/Web	Instructor
MUS N531	3	Quan/Qual Res in Music Therapy	Lecture/Web	Instructor
MUS N530	3	Phil and Theory in Music Therapy	Lecture/Web	Instructor
MUS N533	3	Adv Clinical Techniques in Music Therapy	Lecture/Web	Instructor
MUS N600	3	Thesis in Music Therapy	Mentored/Web	Course Director

PROFESSIONAL SERVICE:

NATIONAL

Organization	Service Activity	Inclusive Dates
American Music Therapy Association (AMTA)	Chair, Research Committee	2011-Present
Society for Music Perception and Cognition	Local Biennial Conference Co-Chair	2009

OTHER PROFESSIONAL SERVICE: SCIENTIFIC/SCHOLARLY REVIEW

Professional Journals	Service Activity	Dates
<i>Journal of Music Therapy</i>	Editorial Board	2009-present
<i>Integrative Cancer Therapies</i>	Guest Reviewer	2012
<i>Journal of Clinical Oncology</i>	Guest Reviewer	2007
<i>Nordic Journal of Music Therapy</i>	Ad Hoc Reviewer	2013-present
<i>Music Therapy Perspectives</i>	Editorial Board	2003-2009
Grant Reviews		
AMTA – Flagler Fultz Award	Reviewer	2011
Internship Scholarship, Midwest Region of AMTA	Reviewer	2010
AMTA – Clinician-based Research Award	Reviewer	2006
AMTA – Student Research Award	Reviewer	2005

UNIVERSITY SERVICE:

CAMPUS – *Indiana University Purdue University Indianapolis*

Activity	Role	Inclusive Dates
Research in Palliative & End-of-Life Communication and Training (RESPECT) Center	Core Faculty	2012-Present
Mary Margaret Walther Program/Behavioral Oncology Cooperative Group (BCOG)	Member	2009-Present
Indiana University, Simon Cancer Center	Member	2009-Present

DEPARTMENT – *Department of Music and Arts Technology*

Activity	Role	Inclusive Dates
Promotion and Tenure Review Committee	Member	2011-2013
Graduate Faculty Search Committee	Member	2007
Instructional Policy Committee	Member	2005-2009
Faculty Council	Member	2005-present
Music Therapy Program	Coordinator	2006-present

SCHOOL – *Purdue School of Engineering and Technology @ IUPUI*

Activity	Role	Inclusive Dates
Faculty Affairs Committee	Chair	2010-2011
Faculty Senate	Parliamentarian/Member	2008-2011
Academic Assessment Committee	Member	2008-2009

CAMPUS/UNIVERSITY - *IUPUI*

Service Activity	Dates
Member at Large, IUPUI Faculty Council	2008-2010
Member, Council of Associate Deans for Research	2007-2008, 2013-2014
Judge, Cancer Research Day	2007
Member, IU Bren and Melvin Simon Cancer Center, Clinical Research Committee	2008-Present
Member, IU Bren and Melvin Simon Cancer Center, Scientific Review Committee	2003-2008

CURRICULUM VITAE

DARRELL L. BAILEY, Ed.D.

Professor of Music
Purdue School of Engineering and Technology
Department of Music and Arts Technology

Work

Purdue University School of Engineering and Technology*
Department of Music and Arts Technology
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Home

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Carmel, IN 46032
Home: (317) 846-1470
Cell: (317) 432-3523
E-ePortfolio:
<http://dbailey.iupui.epsilen.com>

EDUCATION

- 1989** **Ed.D., Education**, University of Illinois (Urbana-Champaign)
- 1976** **M.M.T., Music**, Oberlin College Conservatory of Music
- 1975** **B.A., Music**, Oberlin College
- 1974** **B.Mus., Organ Performance**, Oberlin College Conservatory of Music

CURRENT AND PRIOR ADMINISTRATIVE AND ACADEMIC POSITIONS

- 2009-present **Professor of Music**
Purdue University of Engineering and Technology
Department of Music and Arts Technology
Indiana University Purdue University Indianapolis (IUPUI)
- 2007-2009 **Professor of Informatics**
Indiana University School of Informatics
Indiana University Purdue University Indianapolis (IUPUI)
- 2000-2007 **Founding Executive Associate Dean**
Indiana University School of Informatics, Indianapolis, Indiana
(Collaborated in organizing the start-up of the first new school in 30 years at Indiana University Purdue University Indianapolis)
- 1998-2005 **Director**
Founding Director of the New Media Program at IUPUI

CURRICULUM VITAE

- 2004-Present **Professor**
Indiana University School of Informatics at IUPUI
- 1996-2004 **Associate Professor**
Indiana University School of Music, Indianapolis, IN
- 2004-Present **Adjunct Professor**
Indiana University School of Nursing, Indianapolis, IN
- 1988-1999 **Director**
Indiana University School of Music, Indianapolis, IN
- 1989-1996 **Assistant Professor**
Indiana University School of Music, Indianapolis, IN
- 1988-1989 **Lecturer**
Indiana University School of Music at IUPUI, Indianapolis, IN
- 1982-1988 **Lecturer**
Indiana University School of Music at Bloomington, Music Education Department
- 1981-1982 **Visiting Lecturer**
Oberlin College, Conservatory of Music
- 1979-1981 **Chairman of Music Department, Organist and Choirmaster**
Chatham Hall School, Chatham, Virginia

COLLABORATIONS

- IU-Kenya collaboration, <http://informatics.iupui.edu/news/story.php?id=481> visited MOI, Africa, July 21-29, 2006.
- Lecture to faculty of Bremen University for the Bremen Exchange Collaboration, Bremen, Germany, July 18, 2006.
- A faculty and student exchange agreement for programs in informatics was signed between School of Informatics and Fachhochschule Wiesbaden University of Applied Sciences of Germany on June 27, 2005.
- "Operation Walk," New Media staff documented hip and knee replacement surgeries by a humanitarian team of physicians with video and still photography for use with web sites and other media in Havana, Cuba on April 27-29, 2003, Guatemala, Central America on March 14-21, 2004, and Nicaragua, Central America March 6-13, 2005.
- Memorandum Agreement of Friendship and Cooperation between IUPUI and National Chengchi University in Taiwan established January 18, 2005
- Established collaboration team with Dr. Jean Pappas Molleston, Pediatric Gastroenterology, IU School of Medicine, on "Interactive Modules for Teaching Nutrition to Medical Students and Pediatric Resident," 2003-present

CURRICULUM VITAE

- Collaboration with the Indianapolis Forensic Institute for curriculum to be offered in the School of Informatics in Forensics, 2002 - present
- “Established International Exchange Program between the University of Bremen and IUPUI for New Media students. 2002 - Present
- CD/DVD music project titled, “New Fingers for Old Music,” by Larry H. Smith, Professor of Music at Indiana University School of Music Bloomington, consultant for project, 2002-2003
- Ana Mendez University System, San Juan, Puerto Rico to assess the use of CD-ROM and Videodisc technology in on-site and distance education applications, 1994
- Fairview United Methodist Church, Bloomington, Director of Music and Organist, 1983-1994
- Institute for Academic Technology, Research Triangle Park, North Carolina, Beta Test Researcher for “Express Author” application, 1993-1994
- Carlin Park Schools, Angola, Indiana, to assess feasibility of computers in existing curriculum, 1993
- Punahou School, Honolulu, Hawaii, to develop integration of computer music technology into the music curriculum, 1992

UNIVERSITY AND COMMUNITY SERVICE

- Piano Performance at IUPUI’s University College Honor Society Induction, Madame Walker Theater, April 22, 2004
- Arranged and conducted music for “Singing Deans” at IUPUI’s Chancellor Gerald L. Bepko’s Farewell Celebration, April 23, 2003
- Piano Performance at IUPUI University College Honors Program, University Conference Center, Indianapolis, Indiana, April 4, 2002
- Piano Performance at Women in High Tech Conference, Indianapolis, Indiana, September 20, 2002
- Piano Performance at IUPUI’s University College Honor Society Induction, University Place Conference Center, Indianapolis, IN, April 20, 2001
- Piano Performance at IUPUI’s Chancellor’s Honor Convocation, University Place Conference Center, Indianapolis, IN, April 27, 2001
- Piano Performance at Indiana Information Technology Association (INITA) Annual Meeting, Columbia Club, Indianapolis, IN, December 4, 2001
- Piano Performance at IUPUI School of Liberal Arts Honors Convocation, April 14, 2000
- Piano Performance at IUPUI Honor Society Induction, University College, April 14, 2000
- Piano Performance for IUPUI Chancellors Honors Convocation April,30, 1999

GRANTS AND FELLOWSHIPS

- | | |
|-----------|---|
| 2002-2007 | Health Education in the 21 ST Century, collaboration with Ruth Lilly Health Education Center, Principle Investigator, Lilly Endowment Grant of \$3 million (\$1.17 million for Informatics) |
| 2001-2003 | Team Collaboration with Department of Computer and Information Science: A Digital Cultural Library Indexing our Heritage (CLOH); Co-Principal Investigator, \$250,000, from the Institute Museum and Library Services. Presented the research concept to the Cambodia Ambassador to the U.S., June 25, 2002 – resulting in an agreement to digitally archive Angkor Wat in Cambodia |

CURRICULUM VITAE

- | | |
|-----------|--|
| 1994 | Library Acquisition Grant for Extended Videodisc Collection for Research and Teaching, collection will be basis for multimedia student study of music masterworks, \$4,680 (internal) |
| 1993 | Grant for Interactive Distance Education Conference and Workshop at Center for Excellence in Education, Bloomington, \$2,000 (internal) |
| 1991-1992 | IUPUI Faculty Development Network for Excellence in Teaching Grant, Development of a Computer Music Teaching Curriculum for the Non-Major in a Networked Computer Music Laboratory, \$6,000 (internal) |
| 1990-1991 | Computing Services/IUPUI funding for IBM/Roland fully networked 21 station computer music technology facility, \$125,000 (internal) |
| 1987-1988 | Yamaha Corporation U.S.A. Software Development Grant for YMES Curriculum, \$1,000 (external) |

TEACHING

Graduate Courses:

- Informatics Strategies for Global Engagement (with Sun Yat-Sen University, Guangzhou, China)
- Professionalism and Pedagogy in Informatics
- New Media (N501): Principles of Multi-media Technology
- Computer applications across the music curriculum
- Exploratory Approaches to Teaching Music in Secondary Schools

Undergraduate Courses:

- Introduction to New Media Principles
- Music for the Listener
- Music in the Movies (Special Topics)
- Computers and Keyboards in Music
- Electronic music for computers
- Piano Class
- Voice Class
- Choral methods and materials
- Choral conducting of men's, women's and mixed chorales

PUBLICATIONS

- "Music Listening Today," 4th Edition, with Enhanced CD's, with Charles Hoffer, Thomson/Schirmer Publishers, Active Listening Guides of 89 classical of western civilization works medieval to 20th century, authored the CD Roms for the book, 2010
- "Music Listening Today," 3rd Edition, with Enhanced CD's, with Charles Hoffer, Thomson/Schirmer Publishers, Active Listening Guides of 89 classical of western civilization works medieval to 20th century, authored the CD Roms for the book, 2006
- "Music Listening Today," 2nd Edition, with Enhanced CD's, with Charles Hoffer, Thomson/Schirmer Publishers, Active Listening Guides of 89 classical of western civilization works medieval to 20th century, authored the CD Roms for the book, 2002
- "Music Listening Today," 1st Edition, with Enhanced CDs, with Charles Hoffer, Wadsworth Publishing Company, authored the CD Roms for the book, 1999

CURRICULUM VITAE

- “Teaching Tools in Music” in the *Electronic Classroom*, co-authored with G. David Peters, Learned Information, Inc. New Jersey, 1995
- “Teaching with Technology-Music and Multimedia,” *The Chronicle of Higher Education*, May 1994 (article)
- “Great Composers Series – Beethoven Symphony No. 5,” “Great Composers Series – Brahms Symphony No. 3,” “Great Composers Series – Bach Toccata and Fugue in Dm,” Electronic Courseware Systems Inc., Champaign, IL, spring 1994
- “The Enjoyment of Music Listening Guides, W.W. Norton Co.,” co-authored with Doug Short, IUPUI Music Software Series, 1993
- “The Enjoyment of Music Example Bank, W.W. Norton Co.,” co-authored with Doug Short, IUPUI Music Software Series, 1993
- “Technology Success Stories,” Faculty Development Office, IUPUI, 1992 (article)
- “Music Lab Cluster to Open in January,” *Integrated Technologies Newsletters*, IUPUI, 1991

LECTURES AND PRESENTATIONS

1. Sun Yat-Sen University “Informatics Strategies for Global Engagement”, Remotely and in Guangzhou, China, Spring, 2008
2. Monterey Institute ConnectED Conference “International Health Education in Central America and Kenya: Orthopedic Surgical Care and HIV/AIDS Prevention and Treatment”, Monterey, California, January 23, 2008
3. Taipei Fine Arts Museum Technology Conference, “Informatics Case Studies in Emerging Museum Technology Applications for Education”, Taipei, Taiwan, December 1, 2007
4. Keynote Speaker on “Technology-Enhanced Teaching and Learning” at the National Association of Health Education Centers Conference in Nashville, Tenn., August 30, 2006
5. Oxford Orthopedic 3D Conference, Chicago, Illinois, June 30, 2006 – demonstrating John E-Box for Biomet
6. American Association of Museums Annual Conference, “Building Online Learning Tools: A Collaborative Process,” presented with Terry Dickey, Erin Hersher, and Steve Gano in Boston, Mass., May 1-5, 2005
7. Presentation to faculty at Fu Jen University in Taipei, Taiwan, June 8-14, 2005
8. Presenter at Ruth Lilly Health Education Center Reception, Indianapolis, Wednesday, October 27th, 2004
9. Presenter on “Arts and Humanities: New Media Technologies for Music Teaching and Learning” at World Conference on E-Learning in Corporate, Government Health Care and Higher Education, Washington D.C and Association for the Advancement of Computing in Education November 4-5, 2004
10. Introductory speaker at Tech Tuesday, December 14, 2004, IUPUI, IT Building
11. “Antiphonal Music, Network Latency, and Historical Performance Practice” (conductor for live performing music groups located in Cleveland and Bloomington through high-performance network) Internet2 Global Fall Conference, broadcasted at the Indiana State Museum, Indianapolis, Indiana, October 15, 2003
12. Moderator and Presenter “Advanced Applications-Medical:International Health Education”, Internet2 Global Fall Conference, Marriott Hotel, Indianapolis, Indiana, October 15, 2003

CURRICULUM VITAE

13. Presentation on "Health Education for the 21st Century," Ruth Lilly Health Education Center Evening for Internet2 Global Fall Applications Conference, Indianapolis, Indiana, October 14, 2003
14. Demonstration of the technology developed for the Ruth Lilly Health Education Center at the National Association of Health Education Centers (NAHEC) Conference with Julian Peebles, C.E.O. of the Center, and Skip Comer, Research Associate of Informatics, Philadelphia, PA, September 3, 2003
15. Presentation of the Ruth Lilly Health Education Center's Health Education in the 21st Century Project at the Internet2 Spring Member Meeting in Washington, D.C. with Julian Peebles, CEO of the Ruth Lilly Center, and Skip Comer, Research Associate of Informatics, April 9-10, 2003
16. Speaker on Blue Ribbon panel with Danita Forgey, Director of the Health Information Administration Undergraduate Program, for the American Health Information Management Association (AHIMA) task force meeting, in Chicago, IL, March 10, 2003
17. Convenor for Informatics Connect Tech Presentations at IUPUI, January 17, 2003
18. Presentation on Informatics' Success Story," Indiana University Center on Philanthropy Board, January 13, 2003
19. Television Interview for "Inside Indiana Business" with Kim Manlove, Academic Policies, about IUPUI's Connect Tech Conference, recorded January 10, 2003
20. Presentation on "Informatics' Success Story," at Indiana University: Essential to Indiana's New Economy Conference, Indianapolis, IN, December 10, 2002
21. Presentation on Informatics to IU Chancellors, December 5, 2002
22. Co-Keynote Speaker with Dr. Michael Dunn, Dean from Informatics at Indiana University in Bloomington, at the 2002 Interactive Media Forum: Academe & Industry Planning Together for the Future, Miami University, Oxford, Ohio, October 21-22, 2002
23. Television interview for "Inside Indiana Business," about Informatics, recorded on October 18, 2002
24. Presentation on Informatics to Techlaw Group, Barnes and Thornburg Legal Firm, Indianapolis, IN, October 3, 2002
25. Co-Presenter on Informatics at Health Information Administration (HIA) State Conference with J. Michael Dunn, Indianapolis, IN, April 23, 2002
26. Convener for Informatics Connect Tech Presentations at IUPUI on December 6, 2001
27. Presentation on "Technology, Informatics, and New Media Solutions," at the American College of Sports Medicine Tech Summit Round Table, Indianapolis, Indiana, November 14, 2001
28. Presentation on Informatics at the Indianapolis Chamber of Commerce Board Retreat, Indianapolis, IN, November 8, 2001
29. Keynote Speaker at the "Humanities in a Time of Technology" at the National Humanities Council Conference, Indianapolis, Indiana, November 3, 2001
30. Member of the Platform Party and Ceremony Planning Committee for the Groundbreaking Ceremony for the Communications Technology Complex and Informatics Complex, IUPUI, October 16, 2001
31. Television Interview on "Inside Indiana Business," on Informatics and New Media in Indianapolis, IN, taping June 1, 2001
32. Panel Speaker on Digital Media for Hometown Cinema Film Festival, Indianapolis, Indiana, April 28, 2001
33. Internet2 presentation on the grant project, "Digital Cultural Library Indexing our Heritage (CLIOH)," a virtual flythrough of the Uxmal (Mayan) Ruins, February 17, 2000
34. Malaysian Conference, "Southwest Asian Economic Development Summit" Kuala Lumpur, February 26-29, 2000

CURRICULUM VITAE

35. Presentation at Mahasarakham University, March 1, 2000
36. Presentation at MENC in Washington, D.C., March 9-10, 2000
37. Presentation on Informatics to the IUPU Columbus Campus Advisory Council, July 14, 1999
38. Presentation at "Music Women and Multimedia, March 27, 1999
39. Presentation at the American College of Sports Medicine, Indianapolis, IN, March 3, 1999
40. Presentation at Computer Technology Conference at IUPUI Library, June 21, 1999
41. Presentation at Georgia Music Educators Conference, "Teaching Music to the General Student Using Multimedia," January 29-30, 1999
42. Presentation at Heartland Film Festival, Indianapolis, IN, October 23, 1998
43. Presentation at Computer Music Technology Conference at IUPUI, June 1998
44. Presentation at Performing Arts Advisory Council (Brandt), April 21, 1998
45. Presentation at MENC Mibure in Phoenix, AZ, April 16, 1998
46. Presentation at the Korean Student Organization, Indiana University, Bloomington, Indiana, February 21, 1998
47. Presentation at the Heartland Film Festival on "Issues of the Creative Process," November 7, 1997
48. Presentation at AAHE in Washington, D.C., March 17-18 1997
49. Presentation for ET CEE Dept
50. Presentation for National Association of College Purchasing Agents
51. "Music Technology Advances and Implications for Purchasing," National Association of Educational Buyers Conference, Spencer, Indiana, September 1994
52. Keynote Address, University Metropolitana, Ana G. Mendez University System, San Juan, Puerto Rico, on "The Use of CD-Rom and Videodisc Technology in Higher Education," and "The Use of CD-Rom and Videodiscs in the Teaching of Science and Health Related Fields" at Faculty Technology Symposium, August 1994
53. "Digital Video" at the Institute of Academic Technology, Research Triangle Park, North Carolina, July 1994
54. "Computer Music Laboratory Planning and Design: Assessing Needs, Developing Proposal and Seeking Funding," International Computer Music Technology Conference and Workshop, IUPUI, June 1994
55. "Hypermedia and the Classics – A Demonstration of Videodisc and CD-Rom Technology," Oberlin College Conservatory of Music, Oberlin, Ohio, May 1994
56. "Educational Reform and Technology: Hypermedia in the Humanities and Implications for Business," International Business Forum, Bloomington, IN, April 1994
57. "Technology You Can Use: Teaching Tools for Music," Music Educators National Conference, Cincinnati, April 1994
58. "Simplifying Multimedia," American Association for Higher Education Conference, Chicago, IL, March 1994
59. "Music Technology: Multimedia Explosion," Florida Music Educators Association Annual Conference, Tampa, FL, January 1994
60. "Teaching Tools in Music: Technology You Can Use," Indiana Music Educators Association Annual Conference, Indianapolis, IN, January 1994
61. "Hypermedia and the Enjoyment of Music," W.W. Norton Editors Conference, Indianapolis, IN, January 1994
62. "Using Multimedia for the College Educator and Student," Collegiate GMEA, Mercer University, Macon, GA, November 1993
63. "A New Language – Computers, Keyboards and MIDI," American Orff-Schulwerk Conference," Indianapolis, IN, November 1993

CURRICULUM VITAE

64. "Education Reform and Technology: Music Applications," Great Lakes Governors' Summit on Information and Technology, Indiana Convention Center, Indianapolis, IN, September 1993
65. "Hypermedia in Music," Indianapolis Computer Society, Indiana School for the Blind, Indianapolis, September 1993
66. "Integrating Instructional Software into the Music Curriculum K-12," Pinellas Country Schools In-service Conference, Largo, FL, September 1993
67. "Hypermedia Across the Music Curriculum: CDRom, Videodiscs and CD Interactive," William Rainey Harper College, 1993 Computer Music Conference, Palantine, IL, July 1993
68. "Computer Music Laboratory Planning and Design: Assessing Needs, Developing Proposal and Seeking Funding," 1993 International Desktop Media Alternatives for Higher Education," Independent Colleges of Indiana, Annual Conference, Indianapolis, March 1993
69. "Desktop Media Alternatives for Higher Education," Independent Colleges of Indiana, Annual Conference, Indianapolis, IN, March 1993
70. "Hypermedia in Public School Teaching," In-service conference, Carlin Park School, Angola, IN, April 1993
71. Computer Music Technology Conference and Workshop, Indianapolis, IN, June 1993
72. Presentation on "Multi-media in the Music Classroom," Florida Music Educators Association Annual Conference, Tampa, FL, January 1993
73. "Desktop Media Alternatives for Higher Education," Indiana Higher Education Commission, Indianapolis, IN, October 1992
74. "Technology Enhanced Music Education," Lawrence Township Schools In-service workshop and Guided Professional Service, IUPUI, October 1992
75. "Computer Programs for Kodaly Educators," Midwest Kodaly Educators of America Fall Conference, Indianapolis, IN, October 1992
76. "Computer Music Technology," 1992 Elderhostel, Indianapolis, June 1992
77. "Instructional Software for the Music Studio," Music Teachers National Association Annual Conference, Milwaukee, WI, April 1992
78. Teaching with Multimedia," IBM State-wide Symposium, Bank One Center/Tower, Indianapolis, IN, February 1992
79. "Multi-media Music Presentations Using Computer and MIDI Technology," Indiana Music Educators Association State Music Convention, Indianapolis, IN, January 1992

CONFERENCES, PRESENTATIONS, OTHER EVENTS

- CONFERENCE CHAIR, New Media Consortium 2007 Annual Conference, Indianapolis, Indiana, June, 2008
- IDEA 2006 Conference (Information, Design, Experience, Access), Seattle, Washington, October 21-24, 2006
- SIGGRAPH 2006, Boston, Mass., August 1-3, 2006
- New Media Consortium Conference, 2006, Cleveland, Ohio, June 7-10, 2006
- Indiana Health Industry Forum Innovation 2006, Indianapolis, Indiana, June 13, 2006
- Current Concepts in Joint Replacement Conference in Las Vegas Nevada, May 21-24, 2006, Exhibit
- Internet2 Spring Member Meeting 2006, Washington, D.C. April 24-26, 2006
- American Association of Museums National Conference 2006, Boston, Mass. April 27-May 1, 2006

CURRICULUM VITAE

- i-Conference 2005, School of Informatics Sciences and Technology, The Pennsylvania State University, Harrisburg, Pennsylvania, September 28-30, 2005
- Internet2 Members Conference, Philadelphia, Pennsylvania, September 19-20, 2005
- New Media Consortium Conference, , Honolulu, Hawaii June 15-18, 2005
- SIGGRAPH 2005, Los Angeles, California, August 1-4, 2005
- Internet2 and New World Symphony, Miami, Florida, January 24-26, 2005
- Platform guest for the Informatics and Communications Technology Complex Dedication Ceremony, at IUPUI, October 13, 2004
- Sun's Microsystems Digital Media Universe Conference, Los Angeles, California, October 4-5, 2004
- Fall 2004 Internet2 Member Meeting in Austin, Texas, September 27- 30, 2004
- Informatics Defining the Research Agenda, Bloomington, Indiana, September 10-12, 2004
- Spirit of Philanthropy, Indianapolis, Indiana, April 22, 2004
- Internet2 Spring 2004 Members Meeting, Arlington, Virginia, April 19, 2004
- I-Light Symposium, Indianapolis, Indiana, March 9, 2004
- Internet2 Fall 2003 Members Meeting, Indianapolis, IN, October 13-17, 2003
- Indiana Technology Summit VI, Indianapolis, Indiana, October 1, 2003
- Mira Awards (Cyberstar), Indianapolis, Indiana, April 16, 2003
- Spirit of Philanthropy, Indianapolis, IN, April 24, 2003
- Internet2 Music Education Symposium, Ft. Lauderdale, Florida, March 28, 2003
- SIGGRAPH 2001 Conference, "Explore Interaction and Digital Images," Los Angeles, California, August 13-18, 2001
- "Touchdowns & Technology" sponsored by Indianapolis Colts, Indianapolis Colts Union Federal Football Center, November 27, 2001
- Women and Hi-Tech Awards, Indianapolis, IN, September 7, 2001
- Indiana Technology Summit IV, Indianapolis, IN, October 2001
- Indiana Business Rally, sponsored by Inside Indiana Business, Indianapolis, IN, October 29, 2001
- EDUCAUSE 2000 Conference, Indianapolis, IN, October 30, 2001
- Study Fair United States, Indiana University International Alumni Conference and Reunion Globalization Challenges of a Changing World, Kuala Lumpur, February 24- March 4, 2000
- Expedition to Uxmal for the Digital Cultural Library Indexing our Heritage (CLIOH), virtual flythrough of the Uxmal (Mayan) Ruins grant project, March 15-22, 2000
- American Guild of Organist National Conference, Seattle, WA, July 2-6, 2000
- Indiana Commission on Higher Education Meeting at Purdue, West Lafayette, Indiana, September 7, 2000
- SIGGRAPH 99, August 1999
- Conference in Reston, New Media Center at American Press Institute, November 1998
- IUPUI University College Building Dedication October 2, 1998
- IUPUI Medical Science Building Dedication October 23, 1998
- National Association of Broadcasters Convention, Las Vegas, Nevada, April 7-10, 1998
- Siggraph 98 Conference, Orlando, Florida, July 21-24, 1998
- IU Cancer Research Institute Dedication, September 30, 1997
- Computer Technology Conference at IUPUI, June 1997
- Med Science Cancer Pavilion Dedication, October 1996
- "Toolbook Advanced Applications Seminar," Institute for Academic Technology Research Triangle Park, North Carolina, September 1992

CURRICULUM VITAE

PROFESSIONAL AND ACADEMIC ORGANIZATIONS SERVED

- Association for Computing Machinery (ACM) - SIGGRAPH
- Indiana Music Educators Association
- Internet2 Working Groups
- Music Educators National Conference
- Music Teachers National Association
- Rotary Club of Indianapolis

UNIVERSITY COMMITTEES

- Academic Dean's Meetings
- Arts and Humanities Task Force
- Bepko Celebration Committee
- Budgetary Affairs
- Communications Technology Complex/Informatics Complex (CAB/CTC) Building Meetings
- Ceremony Planning Committee for Groundbreaking of CAB/CTC Building
- Connect Tech Executive Committee
- Faculty Council
- Graduate Affairs Committee
- Health Information Administration Advisory Council
- Informatics and Communications Technology Complex Dedication Ceremony Planning Committee
- Informatics Policy Committee
- Informatics Dean Council, Executive Committee and Curriculum Committee
- IUPUI Solution Center Advisory Board
- National Library of Medicine Grant Steering Committee
- NASM Review of the Music Technology Program at IUPUI
- New Media Program Curriculum Development Committee
- Parking Advisory Committee
- Planning Advisory Committee for Distributed Education
- Technology Day Conference Planning Group
- Technology Dean's Meetings
- University Information Technology Committee (IT Technology Strategic Plan)
- Informatics Dean's Search and Screen Committee for Bloomington, Indiana

Michael R. Drews

Composer

6148 N. Parker Ave.
Indianapolis, Indiana 46220

Phone: (317) 644-9206
<http://michaeldrews.org>
Email: mdrews@iupui.edu

Education

DMA University of Illinois at Urbana-Champaign, 2007, Composition.
MM Cleveland State University, 1998, Composition.
BA Kent State University, 1994, Music.

Professional Experience

IUPUI University, Assistant Professor, 2008-present (Trustee Lecturer, 2006-2008)

Courses taught

- MUS-A 110 Basic Musicianship and Technology I
- MUS-A 120 Basic Musicianship and Technology II
- MUS-A 210 Advanced Musicianship and Technology I
- MUS-A 220 Advanced Musicianship and Technology II
- MUS-N 450/420 BSMT Student Capstone Project
- MUS-Z 317 Computer Music Composition I
- MUS-Z 318 Computer Music Composition II
- MUS-Z 111 Introduction to Music Theory
- MUS-Z 211 Music Theory II
- MUS-Z 311 Music Theory III
- MUS-M 110 Special Topics in Music

University of Illinois at Urbana-Champaign, Visiting Lecturer, 2002-2005

Courses taught

- MUS 103 Music Theory for Non-majors I
- MUS 104 Music Theory for Non-majors II
- MUS 99 Rudimental theory and aural skills for music majors.

HONORS AND AWARDS:

Trustees Teaching Award (TTA)	School of Engineering and Technology, IUPUI	2011
Creative Artist Recognition Award	Department of Music and Arts Technology, IUPUI	2009
Teaching Excellence Recognition Award	Department of Music and Arts Technology, IUPUI	2008
Concurso de Miniaturas International Electroacoustic competition (finalist)	Ministry of Culture of the Junta de Andalucía	2005
ASCAP/SEAMUS Student Commission Competition (first prize)	ASCAP/SEAMUS	2003
UIUC Chamber Orchestra Composition Competition	University of Illinois at Urbana-Champaign	2002 and 1999

SERVICE

DEPARTMENT: IUPUI Department of Music and Arts Technology

Faculty Search Committee	Participated in search activities for tenure-track position in Music Technology.	Spring 2013
Faculty Search Committee	Participated in search activities for tenure-track position in Jazz and Music Technology.	Spring 2013
Instructional Policy Committee	Discussed decisions concerning curriculum new course approval and student affairs. Severed as committee secretary, fall 2008.	2007 -
Musicianship and Technology Course Sequence Development Committee, chair.	Discussed development and implementation of curriculum and policy related to the BSMT degree program.	2008 -
Faculty Search Committee	Participated in search activities for lecturer	Summer 2007

Other department service

Developed web materials, attended CTL sessions and worked with MAT faculty in support of MAT E-portfolio project, Summer-Fall 2010.

Provided assistance to department chair for development of new technology course sequence for BSMT, Spring 2010.

Provide logistic support and hosting assistance during IUPUI Intermedia festival, April 23-25, 2010.

Developed documentation materials for BSMT program during NASM accreditation process, 2009.

Created original music for department BSMT website, Fall 2008.

Developed music theory entrance examination to be used for BSMT student auditions, Fall 2008.

SCHOOL: Purdue School of Engineering and Technology

Undergraduate Education Committee	Discussed decisions concerning curriculum, new course approval and student affairs.	2011 - 2013
Faculty Senate	MAT representative	2010 - 2011
Computer Resources Committee	Discussed issues concerning campus computer labs and technology resources.	2009 - 2010, 2013

UNIVERSITY: IUPUI University

Co-presenter (with Scott Deal, IUPUI) of IUPUI University recruitment presentations at Communication University of China, Beijing Normal University and the Beijing College of Modern Art during October 18-19, 2012.

PROFESSIONAL ACTIVITIES

Scholarly presentations and performances selected through peer review

"Idiomatic Composition and Performance Strategies for Computer Instruments" presented at the neif-norf Summer Festival (nnSF), May 31-June 2, 2013. The festival also featured a concert of original composition work with Scott Deal (percussion), Michael Drews (laptop) and Erzsébet Gaal (harp), including performances of *Surveillance* and *Infrastructure*.

(Presentations and performances, peer review cont.)

“Composition and Performance Strategies for Laptop Instruments and Interactive Media” presented at Electro-Music Festival, Huguenot, NY, September 7-9, 2012. The festival also featured a performance of *End Times* with Michael Drews (laptop).

Performance of *Jack Walk* by Scott Deal with *Big Robot* during the New Interfaces for Musical Expression (NIME) International 2012 Conference, University of Michigan, May 22, 2012 (proposal written by Scott Deal).

Resurrection performed by Michael Drews (laptop) and Jordan Munson (interactive video) during the Ball State University 2012 New Music Festival, March 24, 2012.

“Audio and Visual Themes in *Noir*” presented at the Cinesonika Conference, Simon Fraser University, Vancouver, Canada, February 17-18, 2012. The festival also featured a presentation of *Noir* (fixed media version).

“Developing a Computer Music Performance Practice” presented at the Association for Technology in Music Instruction (ATMI) 2011 National Conference, Richmond, Virginia, October 21, 2011.

Presentation of *Noir* (fixed media version) during the Electronic Music Midwest (EMM) 2011, Kansas City Kansas Community College, September 30, 2011.

Presentation of *Noir* (fixed media version) during Studio 300 Digital Art and Music Festival at Transylvania University, Lexington, KY, September 16-17, 2011. The festival also featured a concert of original interactive computer music with Michael Drews (laptop) and Jordan Munson (laptop).

“Deconstructions: Transforming Contextual Identity Using Interactive Media” presented at the International Association for the Study of Popular Music (IASPM-Canada) International Conference, McGill University, June 16-18, 2011. The festival also featured a performance of *Noir* (live interactive media version, Michael Drews, laptop).

“Technology-based Strategies for Comprehensive Musicianship” presented at ATMI National Conference, Minneapolis, September 23, 2010.

Presented *Infrastructure* (fixed media version) at the 2010 New York City Electroacoustic Music Festival (NYCEMF), New York City, March 27, 2010.

Presented *Infrastructure* (fixed media version) at the 2009 Society for Electroacoustic Music in the United States (SEAMUS) National Conference, Sweetwater Sound, Fort Wayne, IN, April 16, 2009.

Presentation of *Conflux* during the 2007 Electronic Music Midwest (EMM) festival, Kansas City Kansas Community College, October 11, 2007.

Performance of *Broken Symmetry* with David Psekica (piano) and Marlin Varenkovica (oboe) during the 2004 Society for Electroacoustic Music in the United States (SEAMUS) National Conference, San Diego State University, March 26, 2004.

Presentation of *Appassionata* during Electric Pacific 2004: Music for Digital Media concert, San Jose State University, November 18, 2004.

Presentation of *Corruption* during the 2004 Society for Electroacoustic Music in the United States (SEAMUS) National Conference, Arizona State University, March 13, 2003

Presentation of *Corruption* during the Electronic Music at Lewis Festival, Lewis University, IL, May 5, 2001

Invited scholarly presentations and performances

Big Robot invited to perform in 'Daytime Showcase Concert' during the 2013 Percussive Arts Society International Convention (PASIC), Indianapolis, November 13-16, 2013.

Performance of *Surveillance* at Butler University New Music concert, Michael Drews (laptop), Melissa Gallant (harp), Scott Deal (percussion), January 27, 2013.

Invited speaker for the Audio Engineering Society (AES) monthly local meeting, Ball State University, November 29, 2012.

Big Robot invited guest artists during the 2012 Musicacoustica Festival, Central Conservatory, Beijing, China, October 22-25, 2012. Residency included a concert and lecture with Big Robot and the premiere performance of *Surveillance*.

Big Robot, visiting artists at the University of Illinois at Urbana-Champaign, April 14-15, 2011. Residency included a concert and lecture with Big Robot. Also a presentation, "Composing with Max/MSP," was given to an undergraduate composition class.

Performance of *Deconstructions No. 4*, Michael Drews (laptop), Scott Deal (percussion), during the Zerospace Conference on Distance and Interaction in Music, Center for 21st Century Studies, University of Wisconsin-Milwaukee, February 18, 2011.

Performed concert of original composition work with Big Robot during Super Computing Global 2010, New Orleans, November 15, 2010.

Presented "Compositional Approaches to Music Therapy" during the Passages Student and New Professional Music Therapy Conference, Great Lakes Region of the American Music Therapy Association, IUPUI, March 18, 2010.

Performed concert of original composition work with Big Robot during the 2008 Percussive Arts Society International Conference (PASIC), Austin, Texas, November 6, 2008.

Performance of *Broken Symmetry* with Hillary Brunner (oboe) and Shoko Tayama (piano) at Western Illinois University on November 13, 2006

Presentation of *Corruption* at SUNY Stony Brook, NY, February 11, 2004 (invited).

Remunerated and performances and presentations

Performance of *Death of the Mechanical Man* (excerpts of work in progress) with Shannon Hayden (cello), Jordan Munson (percussion, interactive video) and Michael Drews (laptop), Big Car Service Center, Indianapolis, April 26, 2013.

Interactive computer music performance with Jordan Munson (laptop, percussion), Michael Drews (laptop) and Melissa Gallant (harp) as part of Embark (Reconnecting to Our Waterways project), History Center, Indianapolis, September 6, 2012.

Interactive computer music performance with Jordan Munson (laptop, percussion), Michael Drews (laptop) and Melissa Gallant (harp) at the Chatterbox, Indianapolis, May 30 2012.

Big Robot residency at Oklahoma State University, April 9, 2012. Residency included a concert and lecture with Big Robot.

Big Robot residency at Cameron University, April 5-6, 2012. Residency included a concert and lecture with Big Robot.

Big Robot residency at Eastern Illinois University, Feb 27-28, 2012. Residency included a concert and lecture with Big Robot.

Performed concert of original composition work with Big Robot during IEEE CloudCom 2010, Pervasive Technology Institute, IUPUI University, December 2, 2010.

(Remunerated and performances and presentations cont.)

Big Robot residency at University of Kentucky, March 12, 2009. Residency included a concert and lecture with Big Robot.

Invited telematic performances via internet

Surveillance performed by Scott Deal and Erzsébet Gaal, Franz Liszt Academy of Music, Budapest, Hungary (with Michael Drews, laptop, participating via internet), November 18, 2012.

Big Robot telematic performance from IUPUI as part of 2009 Super Computing Global Conference, Portland Oregon, November, 16 2009.

Big Robot telematic performance from IUPUI with Norwegian Academy of Music, June 11, 2009.

Big Robot telematic performances from IUPUI with University of Utah, University of Alaska Fairbanks and Cardiff University, Wales, UK, April 3-5, 2009.

Other performances and presentations

Performance of *End Times* with Jordan Munson (percussion, interactive video) and Michael Drews (laptop) during Midwest Electro-music Experience (MEME), Indianapolis, August 18 2012.

Performance of *Deconstructions* with Jordan Munson (percussion) and Michael Drews (electronics), Big Car Service Center, Indianapolis, August 8, 2012.

Presentation of *Crazyface* during 3(60), public music and art installation, Murphy Arts Center, Indianapolis. August 3, 2012.

Performance of *Deconstructions* with Michael Drews (laptop) and Melissa Gallant (harp), Circle City Industrial Complex, Indianapolis, February 3, 2012.

Performance with Big Robot at the La-la Gallery, Lafayette, IN, October 8, 2011.

Presentation of *Deconstructions #4* as part of the exhibit "Inter:Facing" by IU Associate Professor Margaret Dolinsky, Indiana University, September 9, 2011.

Performance of *Deconstructions* with Jordan Munson (percussion) and Michael Drews (laptop), Murphy Arts Center, Indianapolis, April 1 2011.

Performed concert of original composition work with Big Robot during Intermedia Festival, IUPUI, April 23-25, 2010.

Performed concert of original composition work with Big Robot during the 'Oranje' Festival, Indianapolis, September 19, 2009.

Performance of *The Cabinet of Dr. Caligari*, a live film soundtrack as part of the Big Curiosities miniseries at the Indianapolis Public Library, August 26, 2009.

Performance of original composition work with Big Robot during Blank Slate Festival, Indianapolis, August 8, 2009.

Performance of original composition work with Jordan Munson (laptop) and Michael Drews (laptop), Murphy Arts Center, Indianapolis, March 6 and April 13, 2009.

Performance of original composition work with IUPUI Laptop Ensemble, IUPUI, November 13, 2008.

Presentations on interactive music technology during International Music Technology Conference and Workshop, IUPUI, June, 2008-2012.

GRANTS

Indiana Arts Commission, *Death of the Mechanical Man*, \$2000, 7/1/2013-6/30/2014 (pending approval).

IUPUI Arts and Humanities Grant (IAHI), *Death of the Mechanical Man*, \$5000, 5/1-12/31/2013

IUPUI Overseas Conference Grant, *Musicacoustica-Beijing*, \$1000, 8/23/2012

IUPUI Undergraduate Research Institute (MURI), Notational Systems and Score Design for Computer-based Composition and Performance, \$700, 9/1/2011-5/10/2012 (submitted but not funded).

Lecturers' Development Funds Grant, *Applications of Interactive Music Technology in the Classroom.*, \$5000, 5/10-6/19/2007 (pre-rank).

PUBLICATIONS

Compositions

Death of the Mechanical Man (2013), a multimedia work for cello, piano, percussion and electronic music. Project funded by IUPUI Arts and Humanities Grant. To be premiered at the Irving Theater, Indianapolis, September 20, 2013.

Surveillance (2012), scored for bicycle wheel, harp and electronic music. Premiered during Musicacoustica Festival, Central Conservatory, Beijing, China, October 22, 2012.

Crazyface (2012), 2-channel electronic music. Fixed media version premiered during 3(60), public music and art installation, Murphy Arts Center, Indianapolis. August 3, 2012.

End Times (2012), 2-channel electronic music. Live electronic version premiered during Midwest Electro-music Experience (MEME), Indianapolis, August 18 2012.

Resurrection (2011), 2-channel electronic music. Live electronic version premiered during the Ball State University 2012 New Music Festival, March 24, 2012.

Noir (2010), a multimedia work for percussion, live electronic music and video. Premiered during the 2010 Intermedia Festival, IUPUI, April 23, 2010.

Deconstructions 1-4 (2010-2011), 2-channel interactive media. Presented during during IEEE CloudCom 2010, Pervasive Technology Institute, IUPUI University, December 2, 2010 and 2012 Musicacoustica-Beijing Festival, Central Conservatory, Beijing, China, October 22-25-, 2012.

Infrastructure (2009), a multimedia work for percussion, live electronic music and video. Fixed media version premiered during the 2009 Society for Electroacoustic Music in the United States (SEAMUS) National Conference, Sweetwater Sound, Fort Wayne, IN, April 16, 2009.

Transcendence I-II (2008) a 30 minute electronic soundtrack for guided breath exercise. Commissioned as part of a music therapy study on the musical entrainment of breath to alleviate women's menopausal symptoms, project funded through the National Cancer Institute, May, 2008.

Compositions pre-rank

Attacks and Reflections (2005) Scored for flute, trumpet, bass clarinet, violin, cello and harp. Premiered during UIUC New Music Ensemble Concert, University of Illinois, April 11, 2006.

Broken Symmetry (2004) Scored for oboe, piano and electronics. Commissioned as part of the 2003 ASCAP/SEAMUS Student Commission competition. Premiered at the 2004 SEAMUS National Conference, San Diego State University, March 26, 2004

(Compositions pre-rank cont.)

Appassionata (2003) 2-channel fixed media. Selected finalist for the Concurso de Miniaturas International Electroacoustic 2005 competition.

Corruption (2001) 2-channel fixed media. Awarded first prize in the 2003 ASCAP/SEAMUS student commission competition.

Forward Interrupted (2002) Scored for oboe, cello and piano. Premiered during the MAVerick festival, University of Illinois, July 12, 2003.

Undercurrents (2002) Scored for chamber orchestra. Winner of the 2002 University of Illinois Chamber Orchestra Composition Competition. Premiered during University of Illinois Chamber Orchestra concert, November 13, 2002.

Recordings

Big Robot (A 50 minute multimedia album DVD featuring original music and video art by Big Robot, includes *Noir* and *Infrastructure*.) Unmanned Studios, 2013.

In Celebration of the 50th Anniversary of the University of Illinois Experimental Studios 1958-2008 (A commemorative CD of works by faculty, students and alumni CD of computer music, includes *Appassionata*.), University of Illinois School of Music, 2008.

2005 Electroacoustic Miniatures International Contest CD (A CD featuring works from contest finalists, includes *Appassionata*.), Confluencias.org, Huelva, Spain, 2005. (pre-rank)

Music from SEAMUS volume 14 (A CD of works from the 2004 Society for Electroacoustic Music in the United States National conference, includes *Broken Symmetry*.), SEAMUS.org, 2005. (pre-rank)

Origins (A CD of works from student UIUC composers, includes *Corruption*.) University of Illinois at Urbana-Champaign, Urbana, IL, 2001. (pre-rank)

Articles

"A Description of an Audio-based Paced Respiration Intervention for Vasomotor Symptoms," Coauthored with Debra Burns (IUPUI) and Janet Carpenter (IUPUI), *Music and Medicine*, 5(1), 8-14. doi:10.1177/1943862112470461, 2013.

Dr. G. David Peters

Curriculum Vita

ADDRESS: 535 Michigan Street
Indianapolis, IN 46202

TELEPHONE: 317-278-2591
GPETERS@IUPUI.EDU

EDUCATIONAL RECORD:

1960-1964	University of Evansville (Indiana) Bachelor of Music Education, June
1964-1965	University of Illinois at Urbana-Champaign Master of Science in Music Education
1969-1974	University of Illinois at Urbana-Champaign Doctor of Education in Music Education Dissertation: Feasibility of Computer-Assisted Instruction for Instrumental Music Education

EDUCATIONAL EMPLOYMENT:

1965-1969	Texas Southern University, Houston, Texas Band Director and Brass Assistant Professor
1970-1995	University of Illinois at Urbana-Champaign Professor of Music Education
1972-1977	University of Illinois at Urbana-Champaign Assistant Dean, College of Fine and Applied Arts
1977-1989	University of Illinois at Urbana-Champaign Chairman, Music Education Division
1985-1989	University of Illinois at Urbana-Champaign Chairman, Graduate Committee in Music Education
1992-1995	University of Illinois at Urbana-Champaign Associate Dean, College of Fine and Applied Arts
1992-1994	Co-Director, National Arts Education Research Center
1994-1999	Indiana University and Purdue University at Indianapolis Professor and Head of Graduate Studies in Music Director, Donald Tavel Digital Arts and Technology Research Center
1999-2009	Indiana University and Purdue University at Indianapolis Professor and Director, School of Music
2009-2013	Indiana University and Purdue University at Indianapolis Professor and Head of Graduate Studies in Music

RELEVANT EMPLOYMENT:

1965-2002	Private tutor - brass instruments
1976-2013	Educational consultant - Computer-based instruction and music education
1981-2007	Founder and President, Electronic Courseware Systems, Inc., Publisher of instructional software and music technology

PUBLICATIONS:

Music compositions and method books:

Sight-reading Method for Snare Drum, Charles Colin, Inc. - 1967
Neumes Treibend, M.M. Cole Publishing, Inc. - 1969
Dactylsung, M.M. Cole Publishing, Inc. - 1970
Anapaestic Distortions, M.M. Cole Publishing, Inc- 1971
Formula 315, M.M. Cole Publishing, Inc. - 1973
Reflectus #4, M.M. Cole Publishing, Inc. - 1975
Air and Dance for Timpani, Southern Music Publishers - 1975
Fourteen Concert Etudes for Trombone, Boonin Publishers - 1976
Six Advanced Etudes for Snare Drum, M.M. Cole Publishing, Inc. - 1971
Newburgh Interludes for Four Timpani, Boonin Publishers - 1976

Computer Software Programs in Music:

Instrumental Music Methods Series; (twenty lessons) Computer-Based Educational Research Laboratory, 1975. Series includes pedagogy programs on band and orchestral instruments.

Music Fundamentals Program Series; G. David Peters and Robert Placek, NovaNet Publishing, 1985. Notation, rhythm and time signature drills.

Music Terms for Conducting Students; Control Data Publishing, 1976. Elementary and advanced music terms referring to tempo, style, articulation, expression, dynamics.

Key Identification; Computer-Based Educational Research Laboratory, 1977. Music game for students to drill on quick recall of keys and key relationships.

Spell-and Define; Electronic Courseware Systems, 1982, 2006. Terminology drill-and-practice shell program.

Clef Notes; Electronic Courseware Systems, 1983, 1999. Note reading in treble, alto, tenor and bass clefs.

Keyboard Blues; Electronic Courseware Systems, 1984, 2006. Introduction to blues chords with listening and performance skills sections.

Keyboard Intervals; Electronic Courseware Systems, 1985, 1999. Listening and keyboard performance approach to interval study.

Keyboard Chords; Electronic Courseware Systems, 1985, 1999. Listening and keyboard performance approach to the study of triads and inversions.

presentation
Keyboard Fingerings; Electronic Courseware Systems, 1986, 1999. Practice and of standard piano/keyboard fingering patterns.

Tap-It; Electronic Courseware Systems, 1987, 2006. Rhythm pattern drill program.

recognition.
Tap-it II: Electronic Courseware Systems, Inc., 2006. Intermediate rhythm pattern

recognition.
Tap-it II: Electronic Courseware Systems, Inc., 2006. Advanced rhythm pattern

recognition.
Tap-it Creator: Electronic Courseware Systems, Inc., 2006. Advanced rhythm pattern

Audio Mirror; Electronic Courseware Systems, 1992, 2000. Pitch-judging tutoring for student singers.

digital
Digital Music Mentor; Electronic Courseware Systems, 1994, 2000, 2006. Computerized recorder for private music instruction.

Ricochet, Electronic Courseware Systems, Inc, 1997. Digital music game.

Textbooks:

G. David Peters and John Eddins, A Planning Guide to Successful Computer Instruction, Electronic Courseware Systems, Inc., 1981, 1997, 2000, 2005.

- G. David Peters and Robert Miller, Music Teaching and Learning, Schirmer, Inc., 1982.
 G. David Peters, Musical Skills: A Computer-Based Assessment, University of Illinois:
 Journal of Research in Music Education, 1992.

Chapters in Books:

- "The Fourth Revolution and Music Education," Music Education Symposium,
 University of Illinois: Journal of Research in Music Education, 1982.
 "Convergence: Music Technology and Education," Basic Concepts in Music Education II,
 University of Colorado Press, 1991.
 "Technology in the Music Classroom," The Electronic Classroom: A Handbook for
 Education in the Electronic Environment, Learned Information, Inc., 1995.
 "Music Instruction Software," Intermediate Piano Repertoire: Guide for Teaching, Fourth
 Edition,
 Frederick-Harris Music Publishers, 2000.

Articles:

- "Computer-Based Music Education - Present and Future," Dial-a-Tape Program,
 Illinois State Office of Public Instruction Project, 1971.
 "Double-Tonguing on Brass Instruments," The Instrumentalist Magazine; Vol. xxiii, No.8,
 1969.
 "Brass: What About That Pressure?," The Instrumentalist Magazine; Vol. xxv, No.5, 1970.
 "Computer-Assisted Instruction of Instrumental Methods," The Instrumentalist Magazine;
 Vol. xxx,
 No.2, 1975.
 "Audio Interfacing of the PLATO Computer-Assisted Instructional System for Music
 Performance Judging," Proceedings of Computer Consortium II, University of Illinois,
 1975.
 "Percussion Methods Instruction by Computer," The Instrumentalist Magazine; Vol. xxxii,
 No.6, January, 1978.
 "Hardware Development for Computer-Based Instruction," Symposium Magazine; Vol.21,
 No.2 , Fall, 1981.
 "Computer Technology in Instrumental Music Instruction," Instrumental Magazine; Vol.
 xxxvi, No.3, November, 1982.
 "High Technology and Music Teacher Training," National Education Association, Tape
 narrative and instruction manual, November, 1982.
 "A Complete Computer-Based Music System; A Teaching System - A Musician's
 Tool," ADCIS Conference Proceedings, 1977; Wilmington, Delaware, 1977.
 "Computer-Assisted Instruction: Applications to Standardized Music Achievement
 Tests," ADCIS Conference Proceedings, 1978; Dallas, Texas, 1978.
 "Courseware Development for Micro-Computer Based Education in Music," ADCIS
 Conference Proceedings, 1979, San Diego, California, 1979.
 "Technology as Part of Music Teacher Preparation," Music Educators Journal,
 January, 1983.
 "Using MIDI-TUTOR Laboratories: Keyboard Instruction with Computers," National
 Jazz Educators' Journal, Vol. XIX, No.1, Oct/Nov. 1986.
 "MIDI Music Project Overview: Computer-Based Applications to Instruction," ADCIS
 International
 Conference Proceedings, February, 1986.
 "Computer-Based Music Performance Judging: A Review of Technology and Pitch
 Extraction,"
Symposium, College Music Society, 1989.
 "Computer-Based Music Skills Assessment Project," ADCIS International Conference

Proceedings, October, 1990.

"Computer-Based Assessment of Music Performance Skills," National Arts Leadership Symposium Proceedings, CRME, October, 1992.

"Performance and Pitch Judging with Computers, " Minnesota Music Technology

Conference

Proceedings, July, 1993.

"New College Curriculum for Music and the Arts," International Society for Music Education Proceedings, July 1994.

Articles: (continued)

"What Chief School Administrators Should Know About Music Technology," Music

Technology

Resources Guide, Sound Tree Publications, Melville, NY, 2000.

"Applying the Opportunity-to-Learn Standards to the Music Curriculum," Music Technology Planning Guide, Lentine Music Publications, 2000.

"Music Software and Young Children: Fun and Focused Instruction," General Music Today. Sage Publishing Company, Thousand Oaks, CA, 2008.

Editorial Positions:

Editor, NCCBMI Yearbook (National Consortium for Computer-Based Music Instruction).

Refereed journal with a nine-member editorial board 1977-1979.

Member, Journal for Computer-Based Instruction Review Board (Board of Editors) 1978-1994.

Board Member, Journal of Aesthetic Education Editorial Consultants, 1981-1998.

Board Member, Advisory Council of Dialogue in Instrumental Music Education, 1982-2000.

PROFESSIONAL MEMBERSHIPS:

American Federation of Musicians, 1960-2012.

American Educational Research Association, 1974-1996.

Association for Development of Computer-Instruction Systems (ADCIS), 1976-1994.

Member - ADCIS Steering Committee, 1979-1982.

Member - ADCIS Board of Directors, 1982-1983.

Chairman - ADCIS Governance Committee, 1985-87.

Vice-President - ADCIS, 1988-89.

College Band Directors National Association 1965-1984.

College Music Society, 1976-2001.

Member - College Music Society Executive Council, 1982-1985.

Member - CMS Nominations Committee, 1990. 1993.

Illinois Music Educators Association, 1969-2000.

Indiana Music Educators Association, 2000-2011.

International Council of Fine Arts Deans, 1972, 1988-92.

Music Educators National Conference, 1965-2004, 2012.

MENC Music Technology Chair 1995-2000.

MENC Music Technology Task Force Committee Member, 1998-2002.

Chair of Data Resources National Committee, 1984-1986.

Faculty Advisor for MENC Student Chapter, 1969-1970, 1979-1982.

National Executive Board Member, 1999-2001

Music in the Parks Association (Champaign, IL), Founder and Chairman, 1979-1983.

Music Industry Conference, 1983-2004.

Member of the Board of Directors, 1994-2004.

MIC Technology Chair, 1994-1999.

Membership Chair, 1998-2000.

President-Elect, 1998-2000.
 President 2000-2002
 Music Teachers National Association, 1984-2000.
 National Association of Music Merchants, 1981-2012.
 National Consortium for Computer-Based Music Instruction (NCCBMI), 1975-1988.
 Co-Founder (1975) and President 1979-1983.
 National Endowment for the Humanities
 Board of Advisors, Videodisc Music Literature Project, 1982 - 1985.
 Phi Mu Alpha Sinfonia Music Fraternity, 1961-2013.
 Texas Music Educators Association, 1965-1969, 1993-2002, 2008-2013
 World Piano Pedagogy Conference, 1996-2002.
 Piano Pedagogy Technology Committee Chair, 1996-2000, 2002.
 National Guild of Community Arts Schools, 1996-2013.
 Board of Trustees Member, 2002-2013
 Marketing and Membership Committee Member, 1999-2008.
 Governance and Rules Committee, 2008-2013.

SCHOLARSHIPS:

Music Performance Scholarship, University of Evansville, 1960-1964.
 Evansville Musicians' Club Scholarship Award, 1960.
 Academic Scholarship, Arkla Company, 1960-1964.
 Graduate Assistantship, University of Illinois, 1969.

BIOGRAPHICAL LISTINGS:

The World Who's Who of Musicians
Dictionary of International Biography
Who's Who in the Mid-West

RESEARCH AND ARTS GRANTS:

University of Illinois Research Board Grant, "Feasibility Study in Computer-Assisted Instruction for Instrumental Music Education," 1971-1973.
 Summer Instructional Awards Grant, University of Illinois, "The Development of Computer-Assisted Instructional Materials for Use in the Teaching of Instrumental Music Via PLATO IV," 1973-1974.
 Summer Instructional Awards Grant, University of Illinois, "The Development of Computer-Assisted Instructional Materials: Teaching of Percussion Pedagogy," 1974-1975.
 National Endowment for the Arts, "Computer-Based Music Skills Assessment Project," 1989 (\$61,000)
 National Arts Education Research Center, 1989-1990. (\$3 million grant), administrative director.
 University of Illinois Technology Board Grant, "Hardware/Software Music Laboratory Development," 1991.
 University of Illinois Technology Board Grant, "Using Video and Multimedia for Music Instruction," 1992.
 Clouse Foundation Grant, "Telematic Performance Studio Development," 2008 (\$58,000)

MUSIC PERFORMANCE EXPERIENCE:

Chautauqua Symphony Orchestra (NY), 1960.
 Evansville Philharmonic Orchestra (IN), 1962-1964.
 University of Illinois Brass Trio (PBS Television Program), 1965.
 Houston Trombone Quartet (recital performances), 1967-1969.
 Houston Symphony Orchestra, alternate trombonist, 1968-1969.
 University of Illinois Brass Quintet, 1971-1974.
 Champaign-Urbana Symphony Orchestra, trombonist, 1974, 1983-2013.
 Opera Illinois orchestra trombonist, 1992-2001.

Pocket Big Band (Jazz), 1980-2010.
Numerous Jazz Band Performances including Les Elgart, Tommy Dorsey,
Jimmy Dorsey, Ray McKinley, Bob Crosby, Doc Severensen 1960-2013.

RECORDING:

University of Illinois Graduate Trombone Quartet, Vol. I, UBRES #EN201, 1971.

ADMINISTRATIVE DUTIES AND COMMITTEE ASSIGNMENTS

University of Illinois at Urbana/Champaign:

Assistant Dean, College of Fine and Applied Arts, 1972-1977.
Chairman, Music Education Division, 1977-1989.
Chairman, Graduate Committee in Music Education, 1985-89.
Chairman, College Election and Credentials Committee, 1973, 1975-1977.
Director, PLATO Music Project/Illinois Technology-Based Music Project, 1970-1994.
Coordinator, UNIT ONE Music Project (Applied music instruction program for non-music majors), 1973-1974.

ADMINISTRATIVE DUTIES AND COMMITTEE ASSIGNMENTS (Continued)

University of Illinois
Council on Teacher Education Committee CTEC (music 1972-1982, art 1977-1982, fine
arts
1982-1989, general studies 1993-1994, educational placement 1984-1994), Executive
Board
Member, 1993-1994.
University - College Evaluation Team Member, Illinois State Office of Public Instruction,
1973-
1974 (curriculum evaluation of State and private institutions).
Illinois Junior College Visitation/Articulation Team Member, 1973-1977.
Assistant and Associate Deans Committee Member, 1971-1977 (Chairman, 1975), 1992-
1994.
University of Illinois Honors Council Member, 1974-1977.
Chairman, Music Undergraduate Educational Policy Committee, 1975.
Audio-Recording Music Committee member, 1976-1977.
Campus Operation for Program Evaluation of PLATO - Music, Chairman, 1976-1977.
School of Music Ensemble Committee, Chairman, 1978-80.
School of Music Search Committees (21), Chairman or Member, 1979-1994.
School of Music Course Scheduling Committee Member, 1980.
School of Music Committee on Recruiting, Chairman, 1982-1983.
University Senate Member, 1982-1984, 1991-1993.
Fine and Applied Arts College Computer Usage Committee member, 1986-1994.
School of Music Library Committee member, 1989-94.
School of Music Computer Committee member, 1988-94
Fine and Applied Arts College, Associate Dean, 1992-1994.
Fine and Applied Arts College, Administrative Council, 1992-1994.
National Arts Education Research Center, Administrative Director, 1992-1994.

Indiana University and Purdue University at Indianapolis
Professor and Head of Graduate Studies in Music, 1994 -1999, 2009-2013.
Founder-Director of the International Music Technology Workshop and Conference, 1993-
2013
Member of IUPUI Faculty Council, 1995-2008.
Member of IUPUI Graduate Academic Affairs Committee, 1998-2013.
Director, School of Music Program, 1999-2008

Member of IUPUI Chancellor's Council of Academic Deans and Directors, 1999-2008
Member School of Engineering Faculty Promotion and Tenure Committee, 2010-2011,

2013

DUTIES AND CLASS ASSIGNMENTS:

University of Illinois at Urbana/Champaign

Instrumental Music Methods, 1970-1976.
Computer-Based Music Instruction (CBMI), 1973-1994.
Instructional Design for Music Technology, 1975-1994.
Introduction to Music Education, 1977-1980.
Principles of Teaching Music, 1973-1983.
Music Education Research Methods (graduate level), 1977-1994.
Foundations and Principles of Music Education (graduate level), 1985-1994.
Music in Higher Education (graduate level), 1985-1994.
Research Problems and Methods in Music Education (graduate level), 1988-1994.
Arts Administration and Supervision (graduate level), 1988-1994.
Music Education Student Advisor, 1970-1974, 1977-1990.
Coordinator of Music Education undergraduate student advising, 1974-1975, 1977-1985.
Independent Study Project Supervisor for CBMI in Music, 1973-1994.
Supervisor of Student Teachers, 1971-1976, 1979-1983.
Graduate Faculty Membership, 1977-1995.
Doctoral Advisor, School of Music and College of Education, 1977-1995.

ADMINISTRATIVE DUTIES AND COMMITTEE ASSIGNMENTS (Continued)

Indiana University and Purdue University at Indianapolis

Head, School of Music Graduate Studies, 1995-1999, 2009-2013.
Graduate Advisor, Master of Science in Music Technology, 1995-2002, 2009-2013.
Director, Tavel Digital Arts and Technology Research Center, 2000-2002.
\$300,000 funded research center.

Professor, Graduate Courses in Music Technology and Distance Learning, 1995-2013.

Foundations of Music Production
Principles of Multimedia Technology Design
Music Technology Methods: Using MIDI and Digital Sound
Multimedia Design Applications in the Arts
Advanced Multimedia Design Applications in the Arts
Research Methods for Multimedia Arts
Internship in Arts Technology and Arts Technology Development Project (Advisor)
Designer and Developer of Music Technology Masters Degree Curriculum
Co-developer of IUPUI School of New Media curriculum and degrees, 1998.

SELECTED PROFESSIONAL MEETINGS AND PRESENTATIONS: (1999-2012)

January 1999 National Association of Music Merchants
Seminar: Using Keyboard Lab Controllers to Enhance Music Instruction
Los Angeles, CA

February 1999 Texas Music Educators Conference
Presenter: Music Technology and Music Performance Judging: Pitch Detection
Hardware and Software
San Antonio, TX

Meeting	<p>March 1999 Music Educators National Conference, Eastern Division Convention Presenter: Music Software Applications for Teaching Beginning Keyboard Classes Presenter: Using Software to Control Keyboard Lab Controllers Executive Board Member: Music Industry Conference Board and Membership</p> <p style="padding-left: 40px;">New York City</p> <p>April 1999 Executive Board Member, Music Educators National Conference: National Conference Planning Meeting, Reston, VA</p> <p>June 1999 Board Member: Music Educators National Conference, National Executive Board Reston, VA</p> <p style="padding-left: 40px;">President-Elect: Music Industry Council Executive Board Meeting Palm Springs, CA</p> <p style="padding-left: 40px;">Ninth International Music Technology Conference and Workshop – IUPUI Director: Planning and Conference Activities Presenter: Using Instructional Software for Teaching and Assessment Indianapolis, IN</p> <p>July 1999 Presenter and Consultant: National Association of Music Merchants Meeting Nashville, TN</p>
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PROFESSIONAL MEETINGS AND PRESENTATIONS (Continued):

September 1999	<p>President-Elect: Music Industry Conference Executive Board Meeting Chicago, IL</p>
October 1999	<p>World Piano Pedagogy Conference Presenter: Using the Internet to Support Private and Group Keyboard Instruction. Chair: Music Technology Committee St. Louis, MO</p>
November 1999	<p>National Guild of Community Arts Schools Presenter: Developing Internet Resources for Community Arts Schools Boulder, CO</p>
December 1999	<p>International Midwest Band and Orchestra Clinic Presenter: Pitch-Judging Software for Instrumental Student Practice. President- Elect: Music Industry Conference Executive Board Meeting Chicago, IL</p>
January 2000	<p>National Association of Music Merchants Seminar: Icon-Based Music Interfaces for Music Laboratory Instruction Los Angeles, CA</p>
February 2000	<p>Texas Music Educators Conference Presenter: The National Arts Standards, Texas Education Knowledge and Skills Standards and Music Technology Presenter: Music Technology Applications for General and Choral Music Presenter: Pitch Detection and Music Rehearsals San Antonio, TX</p>

March 2000	<p>Music Educators National Conference, National Convention</p> <p>Presenter: Music Software Applications for Teaching Beginning Keyboard Classes</p> <p>Presenter: Using Software to Control Keyboard Lab Controllers</p> <p>Chair: Panel on Using the Internet to Support Music Programs</p> <p>Panelists included education representatives from IBM, AOL, and Gvox.</p> <p>Presenter: Guided Listening a Curriculum Resource for Teachers and Students</p> <p>Chair: Teacher-Created Websites for Musicians</p> <p>Presenter: Learning Music Fundamentals Using Instructional Software.</p> <p>Executive Board Member: Music Industry Conference Board and Membership</p>
Meeting	New York City
June 2000	<p>President: Music Industry Council Executive Board Meeting</p> <p>Hyannis, MA</p> <p>Tenth Annual International Music Technology Conference and Workshop - IUPUI</p> <p>Director: Conference Planning and Activities</p> <p>Presenter: Building Website for Music Programs</p> <p>Indianapolis, IN</p>
July 2000	<p>Music Educators National Conference, National Executive Board Meeting</p> <p>Board Member</p> <p>Reston, VA</p>

PROFESSIONAL MEETINGS AND PRESENTATIONS (Continued):

October 2000	<p>World Piano Pedagogy Conference</p> <p>Chair: Committee on Technology Presentation</p> <p>Presenter: Applying Technology to the Piano Pedagogy Curriculum</p> <p>Las Vegas, NV</p>
October 2000	<p>National School Board Association Conference</p> <p>Presenter: School Curriculum Implications of the Opportunity to Learn Standards</p> <p>in</p> <p>Music Technology</p> <p>Denver, CO</p>
November 2000	<p>Music Educators National Conference, National Executive Board</p> <p>Board Member</p> <p>Las Vegas, NV</p> <p>National Guild of Community Schools of the Arts</p> <p>Presenter: Marketing the Arts School Concept to Consumers</p> <p>Los Angeles, CA</p>
December 2000	<p>International Midwest Band and Orchestra Clinic</p> <p>Presenter: Using Music Technology in Secondary School Programs</p> <p>Chicago, IL</p> <p>Music Industry Council Executive Board Meeting</p>

President:
Chicago, IL

January 2001 Florida Music Educators Conference
Classrooms Keynote Speaker: Technology and the Music Industry, New Ideas for Music
Tampa, FL

National Association of Music Merchants
Seminar Leader: Digital Keyboard Lab Controller Software Capabilities
Anaheim, CA

February 2001 Texas Music Educators Conference
Presenter: Music Software for Talent and Gifted Music Students
San Antonio, TX

March 2001 Music Educators National Conference
President, Music Industry Conference Board Meeting
Pittsburgh, PA

November 2001 National Guild of Community Schools of the Arts
Presenter: Music Industry Support of Community School Programs
New York, NY

December 2001 International Midwest Band and Orchestra Clinic
Presenter: Integrated Software Solutions for Teaching Music Composition
Chicago, IL

PROFESSIONAL MEETINGS AND PRESENTATIONS (Continued):

December 2001 Music Industry Council Executive Board Meeting – President and Presider
Chicago, IL

January 2002 Georgia Music Educators Association
Keynote Speaker: Music Technology: Applications for Teachers and Students

February 2002 Texas Music Educators Conference – College Division
Presenter: Music Performance Assessment: Software Tools
San Antonio, TX

April 2002 Music Educators National Conference
Presenter: TimeSketch: Guided Listening for Classrooms and Rehearsal Halls
Presider: Music Industry Council Showcase and Exhibits, President MIC
Nashville, TN

February 2003 Texas Music Educators Conference
Presenter: Music Software for Performing Musicians
San Antonio, TX

November 2003 National Guild of Community Schools of the Arts
Presenter: Music Labs for Keyboard Instruction
New York, NY

December 2003 International Midwest Band and Orchestra Clinic

Presenter: Podcasts for High School Music programs
Chicago, IL

February 2004 Texas Music Educators Conference
Presenter: Music Software for Performing Musicians
San Antonio, TX

November 2004 National Guild of Community Schools of the Arts
Presenter: Internet Connectivity for Guild Schools
Boston, MA

December 2004 International Midwest Band and Orchestra Clinic
Presenter: TimeSketch Listening Tools for Music Ensembles
Chicago, IL

February 2005 Texas Music Educators Conference
Presenter: Performance Judging Technology Tools
San Antonio, TX

November 2005 National Guild of Community Schools of the Arts
Presenter: Internet Connectivity for Guild Schools
Los Angeles, CA

December 2005 International Midwest Band and Orchestra Clinic
Presenter: TimeSketch Listening Tools for Music Ensembles
Chicago, IL

PROFESSIONAL MEETINGS AND PRESENTATIONS (Continued):

February 2006 Texas Music Educators Conference
Presenter: Music Assessment through Music Technology
San Antonio, TX

November 2006 National Guild of Community Schools of the Arts
Chair panel: Music Technology Products for Music Creativity
Denver, CO

December 2006 International Midwest Band and Orchestra Clinic
Presenter: MP3 tools for Music Listening
Chicago, IL

February 2007 Texas Music Educators Conference
Presenter: MusicPads and MP3 Accompaniments
San Antonio, TX

November 2007 National Guild of Community Schools of the Arts
Chair panel: Music Technology Products for Keyboard Instruction
Pittsburg, PA

December 2007 International Midwest Band and Orchestra Clinic
Presenter: MusicPads and MP3 Solo Accompaniments
Chicago, IL

February 2008 Texas Music Educators Conference
 Presenter: MusicPad and Download Digital Music
 San Antonio, TX

November 2008 National Guild of Community Schools of the Arts
 Chair panel: Community Music and the Music Industry
 New York, NY

December 2008 International Midwest Band and Orchestra Clinic
 Presenter: MusicPad and Solero Digital Music
 Chicago, IL

February 2009 Texas Music Educators Conference and Technology
 In Music Education (TI:ME)
 Presenter: Digital Music Databases for Instrumental Music
 San Antonio, TX

November 2009 National Guild of Community Schools of the Arts
 Chair panel: Music Technology for Conservatory Teaching
 Boston, MA

December 2009 International Midwest Band and Orchestra Clinic
 Presenter: MusicPad and Solero Digital Music
 Chicago, IL

February 2010 Texas Music Educators Conference and Technology
 In Music Education (TI:ME)
 Panelist: Current Trends in On-line Music Courses
 San Antonio, TX

November 2010 National Guild of Community Schools of the Arts
 Chair panel: Community Music and College Preparatory Programs
 Philadelphia, PA

December 2010 International Midwest Band and Orchestra Clinic
 Exhibitor: IUPUI Music and Arts Technology
 Chicago, IL

February 2011 Texas Music Educators Conference
 Exhibitor: IUPUI Music and Arts Technology
 San Antonio, TX

November 2011 National Guild of Community Schools of the Arts
 Chair panel: Community Music College Preparatory Program Evaluation
 Dallas, TX

December 2011 International Midwest Band and Orchestra Clinic
 Exhibitor: IUPUI Music and Arts Technology
 Consultant: Music Publishing of On-line Resources
 Chicago, IL

February 2012 Texas Music Educators Conference
 Exhibitor: IUPUI Music and Arts Technology

Consultant: Music Industry eBook Development
San Antonio, TX

REFERENCES:

Supplied upon request.

WILLIAM SCOTT DEAL, DMA

Professor of Music

Director, Donald Louis Tavel Arts and Technology Research Center
Indiana University Purdue University Indianapolis

Department of Music and Arts Technology
Purdue School of Engineering and Technology
535 W Michigan St. Room 387
Indianapolis, IN 46202

deal@iupui.edu
317-755-9621

EDUCATION

UNIVERSITY OF MIAMI, Coral Gables, Florida
Doctor of Musical Arts, 1994

"Electronic percussion controllers: Their application in the electronic realization and live performance of *Embers*, by John Van der Slice and *A Change of Scenery* by Robin Cox

UNIVERSITY OF CINCINNATI, COLLEGE-CONSERVATORY OF MUSIC
Master of Music, 1982

CAMERON UNIVERSITY, Lawton Oklahoma
Bachelor of Arts in Music with *High Honors*, 1980

EMPLOYMENT

INDIANA UNIVERSITY PURDUE UNIVERSITY INDIANAPOLIS
Professor of Music, Department of Music and Arts Technology
Director, Donald Louis Tavel Arts and Technology Center, August 2007-Present

UNIVERSITY OF ALASKA FAIRBANKS
Professor of Music, 2007; Associate Professor of Music, 2001-07
Assistant Professor of Music, 1995-2001

NEW WORLD SCHOOL OF THE ARTS, Miami, Florida
Lecturer in Percussion and Music Theory, 1993-95

MIAMI-DADE COMMUNITY COLLEGE, WEST AND NORTH CAMPUSES
Percussion Instructor, 1993-95

UNIVERSITY OF MIAMI FROST SCHOOL OF MUSIC
Percussion Teaching Assistant, 1991-94

HONORS AND AWARDS

Internet2 Driving Exemplary Applications (IDEA) Award, for Auksalaq Telematic Opera, 2011
IUPUI External Recognition Award, 2011
Music and Arts Technology Excellence in Research Award, 2009
UAF College of Liberal Arts Performance Bonus. May 2002
UAF Faculty Senate Certificate of Outstanding Service. 1999
Teacher of the Year, New World School of the Arts. 1995

Student Academic Honors

Soloist, University of Miami School of Music Graduation Commencement, 1994
Award of Academic Merit, University of Miami Graduate School, 1994
Pi Kappa Lambda Honor Society, University of Miami, 1994
Semi-finalist, Louise McMahon International Competition, 1993
Second Place, Percussive Arts Society International Marimba Competition, 1992
Certificate of Excellence in Percussion Education awarded by Ludwig Industries, 1992
Winner, Cincinnati Conservatory Concerto Competition, 1982
First Place, Music Teacher's National Association Collegiate Artist Competition, 1980
Phi Kappa Phi Honor Society, Cameron University, 1979
Certificate of Outstanding Musicianship, Wichita Jazz Festival, 1979

RESEARCH/CREATIVE ACTIVITY

Professional, Remunerated Solo and Chamber Music Engagements

Big Robot at the University of Louisville, 2014
Big Robot at the Irving Theater, Indianapolis, 2013
Concert, Nief-Norf Summer Music Festival, Furman University 2013, including world premiere of *The Rush of the Brook Stills the Mind (ROTBSTM)*, by Elaine Lillios, 2013
Elaine Lillios, *ROTBSTM*, at NEC SICPP, Boston, 2013
Big Robot at Mid America Center for Contemporary Music and Bowling Green State University, 2013
Deal, Burtner, *Auksalaq* at The Phillips Collection, Washington, Lu Magnus Gallery, New York, and University of Virginia, 2013
Duo Concert with harpist Erzsébet Gaal, Budapest National Palace of the Arts, Hungary, 2012
John Cage *27'10.544" for a Percussionist*, NEC SICPP, Boston, 2012
Big Robot at Cameron University, 2012
Big Robot at Oklahoma State University, 2012
Big Robot at Eastern Illinois University, 2012
Big Robot at B-3 Series, LaFayette, IN, 2011
Steve Reich, *Sextet* with the Calithumpian Consort, Boston and Idaho, 2011
John Luther Adams, world premiere of *Four Thousand Holes* Jordan Hall, Boston, 2011
Big Robot at University of Illinois Urbana Champaign, 2011
S. Deal and M. Burtner, *Auksalaq*, telematic opera, at Ear to the Earth Festival, New York, 2010
Kaija Saariaho, *Trois Rivières* at the SICPP, Boston, 2010
Big Robot at IEEE CloudCom 2010, Indianapolis, 2010
Big Robot at Super Computing Global, New Orleans, 2010
Big Robot at Intermedia Festival, Indianapolis 2010
Big Robot Ensemble, *The Cabinet of Dr. Caligari*, Indianapolis, 2009
Deal, *Ester Parade* and *Jack Walk*, and Munson, *Shot and Abandoned* at NEC SICPP, Boston, 2009
Improvisational Computer-Electro Acoustic Performance, Norwegian Academy of Music, Oslo Norway, 2009
Big Robot at University of Kentucky School of Music, 2009
Steve Reich, *Sextet*, with the Callithumpian Consort, at NEC SICPP, Boston
Robin Cox, *Levitation Games* for Solo Marimba and Chamber Ensemble with the Robin Cox Ensemble, Memorial Playhouse, Santa Monica, CA. 2007
Cox, *Levitation Games* (world premiere), Wesly-Smith, *For Marimba and Tape* at California State University Long Beach, 2006
Paul Creston, *Concertino for Marimba*, with the Fairbanks Summer Arts Festival Orchestra, 2006
Michael Finnissy, *Hinomi* for Solo Percussionist, B. Bartok, *Sonata* at NEC SICPP, Boston, 2006

Professional, Remunerated Solo and Chamber Music Engagements Cont'd

Solo Recital and residency, Cameron University, 2006
Solo Recital and residency, Georgia State University, 2005
John Luther Adams, *Red Arc, Blue Veil* with Stephen Drury at Jordan Hall, Boston, 2005
John Luther Adams, *Red Arc, Blue Veil* with the UC Santa Barbara New Music Ensemble, 2005
Solo Recital and residency, University of California Santa Barbara, 2005
Solo Concert, Alternativa Festival, DOM Cultural Center, Moscow Russia, 2001
Deal, *Virtual Improvisations*, at the Kenai Concert Association, Alaska, 2001
John Luther Adams, *Coyote Builds North America* at Arena Stage in Washington DC. Directed by Molly Smith, with The National Ballet, 2001
John Luther Adams, *Earth and the Great Weather* by, at Almeida Theatre, London, UK, with the JLA Percussion Quartet and Synergy Singers. 2001
Guest Artist, Cameron 2000 New Music Festival, 2000
Deal, *Solar Wind* (world premiere), commissioned for opening ceremony of the International Arctic Research Center (IARC) at UAF, 1999
John Luther Adams, *Ilimaq*, at Oberlin College Conservatory, 1999
John Luther Adams, *Ilimaq* (world premiere), for solo percussionist and electronics commissioned for S. Deal by the Fairbanks Symphony, 1998
Ney Rosauro, *Concerto for Marimba and Orchestra* with Fairbanks Symphony, 1997
Artist, Tampa Bay Composer's Forum, 4 concerts with Uncommon Practice New Music Ensemble, works by Hindman, Miki, Blauvelt, Van der Slice, 1994.
Robin Cox, *A Change of Scenery* and John Van der Slice, *Embers*, at the Sub Tropics Music Festival, Miami FL, 1995
Uncommon Practice Ensemble at the Sub Tropics New Music Festival, Miami, 1994
Minoru Miki, *Time For Marimba* for solo marimba by with Momentum Dance Company, Colony Theater, Miami Beach, 1995
Concert, West Palm Beach Concert Association, works by Kurka, Rosauro, Bach, 1994
Dorothy Hindman, *Beyond the Cloud of Unknowing* for solo marimba by and John Van der Slice, *Embers*, at *May in Miami* New Music Festival, 1994

Festival, Conference and Symposia Performances

Big Robot Showcase Concert, Percussive Arts Society International Convention (PASIC) 2013
Deal, Telematic Performance of *Goldstream Variations* with University of Michigan School of Music, at PASIC Technology Day, Indianapolis, 2013
Elainie Lillios, *ROTBSTM* at CEMI Electronic Music Festival, University of North Texas, 2013
Lillios: *ROTBSTM* at Electronic Music Midwest, Kansas City, 2013
Deal, *Goldstream Variations* at ICMC, Perth Australia, performed by *Decibel*, 2013
Deal, *Goldstream Variations* at SICPP Iditarod Concert, Boston, 2013
Big Robot evening keynote concert at *Musicacoustica Festival*, Beijing, 2012
Deal, *Jack Walk*, with Big Robot at New Interfaces for Musical Expression Conference (NIME 2012), University of Michigan
Munson, *Those I Fight I Do Not Hate*, at the Ball State University Festival of New Music, 2012
Deal, Burtner, *Auksalaq* at New World Symphony Internet2 Performance Workshop, Miami Beach, 2012
Electro-acoustic performance at Zerospace Conference and Distance and Interaction in Music, Center for 21st Century Studies, University of Wisconsin-Milwaukee, 2011
Munson, *Those I Fight I Do Not Hate*, at the International Computer Music Conference (ICMC), Huddersfield, UK, 2011

Festival and Conference Performances, Cont'd

Matthew Burtner, *Wood (Pitch)* for Percussion Quintet from the telematic opera *Auksalaq*, at Percussive Arts Society International Convention, 2010

Solo Performance of computer aided musical works at the Indiana University Pavillion for the Supercomputing 08 Conference, Austin Texas, 2008

Dorothy Hindman, *Tapping the Furnace* for percussion soloist (world premiere) at the Indiana State Contemporary Music Festival, Terre Haute, 2008

James Oliverio, *Children of a Common Mother*, Internet2 distributed group performance between Alaska, Brazil, Peru, Mexico and Florida, At University of Florida *Conference on Indigenous Cultures*, 2007

Matthew Burtner, *Windgrains for Flute and Percussion* (world premiere), Florida Flute Association Conference, 2006

James Oliverio, *Drumma*, for distributed ensemble: Keynote Concert, College Music Society National Conference. Internet2 Performance between San Antonio, University of Alaska Fairbanks, University of Florida and University of South Carolina, 2006

Deal, *Cocolithophore* for Two Percussionists, Electronics, and Internet by Scott Deal (world premiere) distributed between Deal at UAF and percussionist Morris Palter in Los Angeles. University of Alaska Fairbanks Internet2 Day Conference, 2006

John Luther Adams, *Roar* for soloist/electronics, and *Qilyaun*, with the Percussion Group Cincinnati, at the Percussive Arts Society International Convention. 2005

Interplay: Loose Minds in a Box, presented by ART GRID, an Internet2, telematic multi-disciplinary performing arts ensemble with collaborators from UAF, University of Utah, University of Illinois Chicago EVL Lab, Purdue Envision Center, University of Montana, and University of Maryland, at Super Computing GLOBAL, Seattle, 2005

ART GRID, *Interplay: Loose Minds in a Box*, at SIGGRAPH, Los Angeles, 2005

Deal, *Virtual Improvisations*, Percussive Arts Society (PAS) International Convention, 2001

Deal, *Virtual Improvisations*, at the Alaska PAS Day of Percussion, 2001

Alaska Council of Arts Concert, Anchorage Alaska, works by Diemer, Heuser and Cox, 2000

Solo performance, Northwest Percussion Festival in Boise Idaho, 1999.

Solo Concert, Society of Electro-Acoustic Musicians in the U.S International Conference, 1996

Solo Concert, Florida PAS Day of Percussion, 1994

High Bandwidth Internet Performances

Burtner and Deal, *Auksalaq*, official world premiere of full telematic version; Norway, Virginia, Montreal, Indiana, Alaska, 2012

Telematic Performance with Big Robot and Telematic Collective between Indiana and Budapest, Hungary, 2012

Arne Nordheim, *Response I* performed between IUPUI Tavel Lab and Bergen, Norway, with Peter Kates, Bergen Philharmonic Orchestra, 2011

Telematic Collective Concert Performance with University of Calgary and Indiana University Bloomington, Intermedia Festival, 2010

Telematic Performance with Big Robot at Super Computing Global, Portland OR, 2009

Telematic Performances by Big Robot Faculty Ensemble in AnARTomy, and Interplay on high-speed internet by the ART GRID Consortium and Another Language Production Company, with University of Utah, IUPUI Tavel Lab, Cardiff University, Wales, 2009

ART GRID, *Interplay: Ne Tiempo Del Signo* (world premiere), at University of Alaska, University of Utah, University of Illinois Chicago EVL Lab, Purdue Envision Center, University of Montana, and University of Maryland, 2007

High Bandwidth Internet Performances, Cont'd

ART GRID, *Interplay: Dancing on the Banks of Packet Creek* (world premiere), at University of Alaska, University of Utah, University of Illinois Chicago EVL Lab, Purdue Envision Center, University of Montana, and University of Maryland, 2006

Net Jam, Internet2 distributed improvisation with the Helsinki Computer Orchestra, Helsinki, Finland. 2006

Chicago Calling Internet2 distributed improvisation with musicians at Stanford University, University of California San Diego, University of Alaska Fairbanks, and venues in Chicago, 2006

ART GRID, *Interplay: Loose Minds in a Box* (world premiere), at University of Utah, 2005

ART GRID, *Interplay: Hallucinations* (world premiere) between UAF, University of Utah, and University of Maryland, at University of Utah, 2004

Selected Performances, University of Alaska Fairbanks

Tan Dun, *Elegy: Snow in June* for Amplified Cello and Percussion Quartet; UAF Percussion Ensemble; Fairbanks Symphony Concert with cellist Andres Diaz, 2007

Martin Wesley-Smith, *For Marimba and Tape* at the UAF Discovery Lab of with 3-D computer graphic animation by Miho Aoki, 2005.

John Luther Adams, *Five Quartets from Coyote Builds North America* Concert with the Percussion Group Cincinnati, Alaska Day of Percussion, 2004

Alec Wilder, *Sextet for Marimba and Wind Quintet* and *Duo For Trumpet and Piano*, Fairbanks Symphony Association American Originals Concert, 2002

Janice Giteck, *Leningrad Spring* and *Tapsaya*, John Luther Adams, *Dust Into Dust* and *Roar* Fairbanks Symphony American Originals Concert, 2002

Deal, music, with M. Aoki, art, in *Standstill*, at "Made in Fairbanks" Exhibition, University of Alaska Museum of the North, 2003

Deal, *Virtual Improvisations*, 2001

Faculty Recital, works by Cox, Deal, Diemer, Heuser, and Van der Slice, 2001

Dorothy Hindman, *Dances*, and Charles Norman Mason, *Kat/Ewi/Key* (world premieres), Fairbanks Symphony Association, 1997

David Heuser, *Blowup* by and Emma Lou Diemer, *Ice Rhythm* (world premieres), Fairbanks Symphony Recital, 1997

Henry Wolking, *Powell Canyons* for Jazz Quartet and Orchestra by (world premiere), with the Fairbanks Symphony, 1996

Faculty Recital, works by Deal, Miki, Rosauro, 1995

Invited Presentations

Keynote Speech, Nief-Norf Music Research Institute and Festival, Furman University, 2013

Percussion and Computer Acoustic Performance, McGill University Schulich School of Music, 2013

S. Deal, Elaine Lillios, *Composing and Performing Contemporary Percussion and Real-Time Computer Processing*, at the Southern Methodist University School of Music, Dallas, 2013

Musical Computer Interactivity at the Liszt Conservatory of Music, Budapest, 2012

Beijing lectures, S. Deal, M. Drews, *Musical Computer Interactivity*, at Capitol Normal University, Beijing College of Modern Art, Communication University, and the Contemporary Music Academy, 2012

Auksalaq Overview, at Smithsonian Institute Folklife Festival, Washington DC, 2012

Auksalaq Overview, Institute of Digital Arts and Humanities, IU Bloomington, 2012

Auksalaq, an Overview, at the Internet2 Fall Member Meeting, 2011

Colloquium on Telematic Artistry, at Zerospace Conference and Distance and Interaction in Music, Center for 21st Century Studies, University of Wisconsin-Milwaukee, 2011

Computer Interactivity, Graduate Composition Class, Indiana University Bloomington, 2011

Telematic Arts Overview, IUPUI Music Technology Conference and Workshop, 2010

Invited Presentations, Cont'd

Online Discussion Panel: *Telematic Performance with Access Grid Technology*, at the University of Utah Center for High Performance Computing, 2010
Telematic Performance and Discussion: Internet and Internet2-Based Performances, IUPUI Music Technology Conference, 2009
Demonstration of Telematic Art online for the Norwegian Minister of Culture and Education, between IUPUI Tavel Lab and the Norwegian Academy of Music, Oslo, 2009
Computer Electronics in Live Performance, University of Kentucky, 2009
Telematic Arts at New World Symphony Internet2 Production Workshop, Miami Beach, 2009
Telematic Arts, Supercomputing 08, Austin Texas, 2008
The Electro-Acoustic Percussionist at the PAS International Convention, Austin Texas, 2008
Telematic Arts, at the IUPUI Cutting Edge Lecture Series, 2008
Marimba Technique, California State University Long Beach, 2006
Percussion in the Bandroom, Alaska Music Educator's Conference (AMEA), 2006
Developing Multipercussion Solo Skills, Percussive Arts Society Alaska Day of Percussion, 2005
Building the Percussion Section, AMEA, 2004
The Integrated Percussionist, Alaska Day of Percussion, 2003
Electronic Percussion, Northwest Percussion Festival, Boise Idaho, 1999
The High School Timpanist at the AMEA Conference, 1999
Fundamentals of Mallet Wrapping at the AMEA Conference, 1999
Characteristic Tone Quality in Your Percussion Section, AMEA Conference, 1998
Alaska All-State adjudicator/section coaching, 1995, 98, 01-05
Alaska Solo and Ensemble Adjudicator, 1998-2003
Kenai Peninsula Massed Band Festival, guest conductor, adjudicator, 1996, 2003
Alaska Region V Band Festival, percussion coach, adjudicator, 1999
Getting Started with Electronic Percussion, Alabama Day of Percussion, 1996
Characteristic Tone Quality in Your Percussion Section, Florida Band Master's Association Conference, 1995

Residencies, Exchanges and Consultations

CIRMMT, Schulich School of Music, 2013
Norwegian Academy of Music, Oslo, 2009
Rochester Institute of Technology, 2010
Cameron University, 2006
Arctic Region Supercomputing Center External Review Panels, 2005, 2006
University of Cincinnati, 2005
Georgia State University, 2005
University of California Santa Barbara, 2005

Affiliations

Donald Louis Tavel Arts and Technology Research Center, IUPUI; Director, 2007 to present
New England Conservatory Institute for Summer Institute for Contemporary Performance Practice (SICPP) Faculty, 2006 to present
Arctic Region Supercomputing Center, University of Alaska Fairbanks; Research Affiliate, 2004-08
ART GRID telematic consortium and multidisciplinary performance group, member 2003-09
Fairbanks Summer Arts Festival Artist-Faculty, 1996-07

Performance Groups

Big Robot, a computer-acoustic trio and resident ensemble at IUPUI, 2008-present
Fairbanks Symphony, Timpanist and Principal Percussion, 1995-2002
Arctic Chamber Orchestra, Timpanist, 1995-2002
Miami Symphony, Timpanist, Principal Percussion, 1992-1995
Actor's Playhouse, Miami, Percussionist, 1992-1995
Uncommon Practice New Music Group, Miami, 1992-95

Collaborative Affiliations

Percussion Group Cincinnati, Digital Worlds Institute UF, Calithumpian Consort, Boston; MICE Ensemble (University of Virginia), Interactive Media Research Group (UVA), Helsinki Computer Orchestra, Decibel, (Perth)

Conference Presentations

S. Deal, Javier Sanchez; *Integration of machine learning algorithms in the computer-acoustic composition Goldstream Variations* at ICMC, Perth, Australia, 2013
S. Deal, *Construct and production elements for a large scale telematic opera*, at Net Music Symposium, Stanford University, 2013
S. Deal, Michael Drews, Jordan Munson; *Artistic Models Computer Interactivity* at Musicacoustica Festival and Conference, Beijing, China, 2012
Cultivating Telematic Artistry: New Media Consortium Conference, Madison, WI, 2011
Intermedia Festival: Artistic Collaborations Over High Bandwidth Networks; at the Internet2 Fall Member Meeting, Atlanta, 2010
Artistry in Telematic Performance, ANET II Conference, Banff, Canada, 2008
Performance Beyond Place: Musical Applications on Internet2, at the College Music Society National Conference, San Antonio, 2006
The University Telematic Ensemble, at the Association of Music Technology Instructor's National Conference, San Antonio, 2006
Recent Developments for Musicians in Internet Technology, Lecture at the Percussive Arts Society International Convention, Ohio, 2005
Producing Music Clinics and Performances on the Access Grid, at the Association of Music Technology Instructor's National Conference, San Francisco, 2004
The Access Grid as a Tool for Music Performance and Education (Poster), College Music Society National Conference, San Francisco, 2004
Engaging Community Through the Art of Music, at the University of Alaska Academy Anchorage, AK, 2003
The Eskimo Drums of Alaska, Percussive Arts Society International Convention, 1996

Book Chapters

"Climate Change as Telematic Art" in *North by 2020: Perspectives on Alaska's Changing Social-Ecological System*, Amy Lovecraft, ed. Fairbanks, University of Alaska Press, 2011
"Qilyaun", in *The Farthest Place: The Music of John Luther Adams*, Bernd Herzogenrath, ed. University Press of New England, 2012
"Percussion and Technology" chapters as well as DVD demonstrations on percussion technology in *Teaching Percussion, 3rd Edition*, by Gary Cook (ed.). Schirmer, 2006

Refereed Journal and Proceedings Articles

Deal, Sanchez, *Integration of machine learning algorithms in the computer-acoustic composition Goldstream Variations*, in *Proceedings*, International Computer Music Conference (ICMC), AUS, 2013

Deal, Burtner, *Auksalaq, a Telematic Opera*, in *Proceedings, ICMC UK*, 2011

Charles Nichols, Scott Deal, Timothy J. Rogers, Jimmy Miklavcic, et.al; *Musical Performance over the Internet Using the Access Grid*, in *Proceedings, ICMC 2006*

Percussion and Internet2, in *Percussive Notes*, February, 2005. Also posted on the Internet2 website: <http://arts.internet2.edu/>.

The Eskimo Drums of Alaska in *Percussive Notes*, February 1998

Multiplicity in Electronic Percussion Music: "A Change of Scenery" by Robin Cox, *Percussive Notes*, 1995

Discography

Big Robot DVD by Big Robot, works by Deal, Drews, Munson; Unmanned Studios, 2013

Four Thousand Holes, by John Luther Adams, Cold Blue Records, 2011

Levitation Games by Robin Cox on *Faster Than That*; Robin Cox Ensemble, 2010.

Red Arc Blue Veil and *Qilyaun* by John Luther Adams on *Red Arc, Blue Veil*; Cold Blue Records, 2007

Embers, by John Van der Slice, on *Solos and Duos* (2006), Albany Records (TROY870)

Beyond the Cloud of Unknowing by Dorothy Hindman on *New Music, Young Composers*, SCI, 1994

Symphonic Melismas, by Carlos Surinach, (performing as Timpanist with the University of Miami Symphony Orchestra), on *Carlos Surinach*, Centaur Records (CRC 2256), 1995

Press Articles

Colin Holter, "Sounds Heard, Big Robot", *New Music Box*, February 2014

Dana Wen, "Big Robot: Pushing Boundaries In Multimedia Performance", *I Care if You Listen*, 2014

MP Cavalier, "A City of Two Tales, Part II: Big Audio +Big Video = Big Robot", *Do It Indy*, September 2013

Jennie Gottschalk, "The Mush Race of Boston: The 2013 SICPP Iditarod", *New Music Box*, June 2013

Alexv Rolfe, "Interdisciplinary Musicians: Reflecting on the 2013 nief-norf Summer Festival", *New Music Box*, June 2013

Ric Burrous, "Scott Deal is a Musician Who Teaches", *Inside IUPUI*, June 2013

Jay Harvey, "Superstorm makes premiere of IUPUI professor's musical work "Auksalaq" only more Relevant", *Indianapolis Star*, October 2012

Scott Shoger, "Opera on a Global Scale: Auksalaq at IUPUI", *NUVO Magazine*, October 2012

Jay Harvery, "Telematic Opera Auksalaq Makes World Premiere at IUPUI, Six Other Sites", *Indianapolis Star*, October 2012

Michael McBride, "Auksalaq: An Alaskan Telematic Climate Change Opera", *National Geographic*, October 2012

Kurt Gartner, "State of the Art: Scott Deal and Jordan Munson on Music Technology", *Percussive Notes*, July 2012

Matthew Guerrieri, "New England's Prospect: the Long Long Trailer", *New Music Box*, June 2012

Frank Epswich, "IUPUI professor Scott Deal Melds Percussion and Technology", *Indianapolis Star* video: April 2012

Kathleen Mills, "Embracing the Rhythm of Work", *Indianapolis Star*, April 2012

Carolyn Stephens, "Big Robot was Cleverly Musical and Techie at EIU", *Journal Gazette-Times Herald*, March 2012

Scott Shoger, "IUPUI Prof's album in New Yorker Top Ten", *NUVO Magazine*, December 2011

Alex Ross, "The Best Classical Recordings of 2011" *New Yorker Magazine*, December 6, 2011

Zoe Kemmerling, "Two Sides of Electronic Music at SICPP Day 4", *Boston Musical Intelligencer*, June 2011

Scott Shoger, "Pamela Z Closes the Intermedia Festival", *NUVO Magazine*, April 2010

Press Articles, Cont'd

Scott Shoger, "Dispatch from the Intermedia Festival", *NUVO Magazine*, April 2010

Rita Kohn, "Intermedia Festival Concert 2: Dance and Telematic", *NUVO Magazine*, April 2010

Anne Heavey, "Telejamming over the Net", *International Science Grid This Week*, January 2010

Caldwell Titcomb, "Classical Music Review: It's Sick Puppy Time" *The Arts Fuse*, June 2009

Rodney Lister, "Sick Puppy and Michael Finnissy", *Sequenza 21*, June 2006

PROJECTS

Intermedia Festival (Festival Director)

Held in 2010, the *Intermedia Festival* in Indianapolis was a unique series of 16 concerts and events presenting live performances in the digital arts. The events spanned concerts to virtual reality, installations, performance art and telematics performed throughout the city. Produced with funding from a Lilly Foundation/Indiana University New Frontiers New Directions grant, the festival featured artists, musicians, videographers, dancers, actors and writers from around the world.

Auksalaq Telematic Opera (Co-creator, media, systems producer)

Conceived and Created by Scott Deal and Matthew Burtner

<http://auksalaq.org/>

Auksalaq, the Inupiat word for "melting snow/ice", is a telematic work that explores global climate change in the Arctic. Using networked technology, videography, music, voice, visual arts and interviews, *Auksalaq* integrates artistic expression, scientific information and commentary to create an interactive, multi-dimensional experience. A new, interactive audience-participation software called NOMADS enables engagement with the performance in real-time. Backstage communications software, developed by the Tavel Lab at IUPUI enables sophisticated coordination of telematic performers over the Internet in realtime.

Big Robot Ensemble (Founding member)

Big Robot is a computer-acoustic trio that creates live media-enriched art and music, interweaving aesthetic expression with computer interactivity and networked technology. Big Robot employs interactive processes such as motion tracking, acoustic instrument sampling, audio processing, integration of real-time video, and the use of telecommunications software/devices. The group comprised of IUPUI faculty members Scott Deal, Michael Drews, and Jordan Munson, performs in live venues as well as telematically over research-grade, high-bandwidth Internet from the Donald Tavel Arts and Technology Research Center at IUPUI. Big Robot has presented concerts throughout the world since 2009, and in 2013 the group released a multimedia DVD that was critically well received.

Percussive Arts Society International Convention (PASIC 2013) Technology Day at IUPUI (Conference Host and Coordinator)

The event showcased the state of music technology in a broad spectrum of areas important to percussionists, including performance, education, notation, and composition. The Day featured four concerts with over a dozen percussionists from the United States, Brazil, Canada, France and Spain in areas such as live electro-acoustic percussion, media enriched performance, telematics, and use of MIDI controllers.

FUNDING

IUPUI Arts and Humanities Institute (IAHI) Proposal for Christian Wolff/Elainie Lillios Composition Project, (\$5000), 2012
IAHI Proposal for Big Robot DVD Production (\$5,000), 2011
Indiana Arts Council Artist's Grant, for recording segments of *Auksalaq* (\$2,000), 2011
Multidisciplinary Undergraduate Research Initiative (MURI) 2011/12 grant (\$7500) 2012
MURI 2010/11 Academic Year Grant (\$7500), 2011
MURI 2009/10 Academic Year Grant (\$9000), 2010
IUPUI Arts and Humanities Institute (IAHI), Proposal for *Auksalaq* Opera (\$15,000), 2010
MURI Spring and Summer Telematic Software Development Projects (\$9000 and \$6,000), 2009.
Lilly Foundation/IUB New Frontiers Intermedia Festival Project (\$20,000), 2009
IUPUI Conference Fund for Intermedia Festival (\$3000), 2010
UAF International Polar Year (IPY) North by 2020 Sub-Grant, for media production (\$5000), 2009
ConocoPhillips Educational Grant for the Drums of Knowledge Rural Alaska Tour, \$6100, 2007
UAF Technology Advisory Board Grant for the Digital Music Department Project, \$14,000, 2006
ConocoPhillips Educational Grant for the Drums of Knowledge Rural Alaska Tour \$5000, 2005
Meet the Composer Creative Connections Grant for Robin Cox Ensemble at UAF \$1500, 2004
UAF Office of Sponsored Programs Travel Grant for Percussion Ensemble to perform at the MENC Northwest Division Conference, \$9600.00, 2004
ConocoPhillips Educational Grant for the Drumming with Valerie Naranjo residency, \$5000, 2003
ConocoPhillips Educational Grant for the Drums of Knowledge Tour \$5000, 2002
UAF Technology Advisory Board Grant for UAF Music Technology Program, \$14,400, 2002
UAF Technology Advisory Board Grant for percussion technology studio, \$7200, 2000
UAF Technology Advisory Board Grant to Music Technology, \$5347, 1999
University of Alaska President's Special Projects Grant for purchase of music equipment \$2000, 1998
University of Miami Technology Fund Percussion Camera, \$1500

Fund Raising and Gifts

Donations for Rural Alaska Tour, Percussive Arts Society and the Fairbanks Festival, \$2000, 2005
CLA Dean's grant for UAF Ensemble performance at the Percussive Arts Society International Convention, \$5600, 2005
University of Alaska System Grant for new marimba and vibraphone, \$12,000, 2004
UAF Percussion Program Concert Funds, \$4700.00, 2003
Chancellor's gift for purchase of percussion equipment, \$3000, 1998
Dean's Travel Grant for UAF Percussion Ensembles, \$3000, 1997
Steel Drum Fund Raising Project: Fairbanks community and UAF Chancellor Joan Wadlow, \$8000, 1997
Marimba Fund Raising Project, with Fairbanks Summer Arts Festival, \$12,000, 1996

TEACHING

Directed Performance Ensembles

Telematic Collective, Percussion Ensemble, World Beat Drumming Ensemble, Steel Drum Ensemble, Improvisation Ensemble

Academic Courses

Research in Music and Multimedia, Music Technology Methods, Interactive Performance Techniques, Studio Percussion, Music in World Cultures, History of Popular Music, Percussion Education Methods, Introduction to Music Technology, Music Technology Practicum, Interrelation of Art, Music, and Drama

Advising

IUPUI: Graduate, Internship, and Project Advising for degree in Master's of Science in Music Technology
UAF: Advising and committee participation; Master's and PhD programs in Music, Anthropology, Art, Communications and computer technology. Advisor; Arctic Region Supercomputing Center Internships

Telematic Collective at IUPUI

Founded in 2007, the Telematic Collective consists of advanced students from a variety of disciplines, such as music, dance, drama, literature, visual arts, videography, software development, information technology, scientific inquiry and computer engineering. The students collaborate to create a live performance event, focused on computer interactivity and artistic use of telecommunications, in order to create new and original media-enriched works for the performing stage.

Selected Telematic Collective Events

Media concerts of Telematic Collective with Butler University Dance Studio, 2012
Telematic Collective performs music from *Auksalaq* with University of Virginia, 2012
Telematic Collective with Herron School of Art Graduate Studio, 2012
NetTets 2011, IUPUI Telematic Collective with University of Calgary, University of British Columbia, Concordia University, 2011
Telematic-Computer-Electro Acoustic Performance, Between IUPUI Tavel Lab and the Indiana University Bloomington Hope School of Art Hybrid Arts Lab, Margaret Dolinsky, Director, 2011
Bridging Imaginary Boundaries: Telematic Concert performing online at the Frederick Loewe Theater, NYU, with New York University, Colorado University, 2010
Telematic Collective Concert Performance with University of Calgary and Indiana University Bloomington, Intermedia Festival, 2010
Happening Festival, at the Syneme Telemedia Arts Lab at the University of Calgary with Central Conservatory of Music, China; Sonic Arts Research Center, Belfast, University of Waikato, New Zealand, Yong Siew Toh Conservatory of Music and the Arts and Creativity Lab, China, Interactive and Digital Media Institute of the National University of Singapore, 2010
Telematic-Computer-Electro Acoustic Performance, Between IUPUI Tavel Lab and the Norwegian Academy of Music, Oslo Norway, 2009
Telematic Concert: IUPUI Telematic Ensemble with University of Illinois Urbana Champaign, Rensselaer Polytechnic Institute; Scott Deal, Director, 2009

Multi-disciplinary Undergraduate Research Initiative (MURI) Faculty-directed teams

MURI 2010-11 Team (Commons, Hartgrove, Riha, Rogge, Deal) *Implementation of Software and Hardware Applications in the Live Performance of Telematic Art*, IUPUI Research Day, 2011
MURI 2009 Team (Humphreys, Saed): *Software and IT Solutions for Auksalaq Telematic Opera Project*, at IUPUI Research Day, 2009
IUPUI Music Technology Conference and Workshop, Humphreys, Saed, Deal, *Software and IT Solutions for Auksalaq Telematic Opera Project*, 2009

New England Conservatory Summer Institute for Contemporary Performance Practice

Faculty since 2006 for this annual week-long summer intensive for new music and electro-acoustic performance, coaching a student body of graduate students from around the world.

UAF Invited Student Solo and Ensemble Performances

Percussive Arts Society International Convention, Ohio; UAF Percussion Ensemble, 2005
MENC Northwest Division Conference, UAF Percussion Ensemble Concert, Washington, 2005
Northwest Percussion Festival, UAF Percussion Ensemble, Bellingham Washington, 2001

UAF Invited Student Solo and Ensemble Performances, Cont'd

Music Teacher's National Association Young Artist Finals, (UAF percussion student Cayenna Ponchione), Los Angeles California, 2000
PAS Alaska Days of Percussion, UAF Percussion Ensemble, annually from 1995-2007

SERVICE

Professional Administrative and Committee Service

Reviewer for Organized Sound Journal, 2015 Edition
Reviewer for ICMC 2013
Review for VJ Manzo, VJ and Kuhn, W: *Interactive Composition: Strategies Using Ableton Live and Max for Live*, Oxford University Press, March 2012
Review for the New Interfaces for Musical Expression (NIME) International Conference, 2012
Review for the Percussive Arts Society 2012 International Convention, Austin TX
Reviewer for Organized Sound Journal, 2012 Edition
Member, Internet2 National Performing Events Advisory Committee, 2006-present
Percussive Arts Society, member, Technology Committee. 2000-present
President, Alaska Chapter, Percussive Arts Society (PAS), Alternating years, 1996-2007
Organizer and host of the PAS Alaska Day of Percussion Alternating years, 1996-2007
PAS composition Committee member, 2004 to 2007
Chair, Alaska Music Educators Association (AMEA) research committee, 2001-2004

University Service, IUPUI

Chair, IUPUI Music and Arts Tech Computer Research Faculty Search, 2013
Chair, IUPUI Music and Arts Tech Performance Ensembles Director Faculty Search, 2013
Lead Author and Coordinator, National Association of Schools of Music (NASM)
Accreditation Self-Study and Visitation for IUPUI Music and Arts Technology, 2009-10
School of Engineering and Technology Grievance Committee, 2011, 2013
School of Engineering and Technology Promotion and Tenure Committee, 2008-10, 13-14
University-Wide Tenure and Promotion Committee, 2010
School of Engineering and Technology Tech Services Committee, 2009-10
Department Executive Faculty Committee, 2007-present
Departmental Curriculum Committee, 2007-Present
Departmental Tenure and Promotion Committee, 2007-Present

University Service, UAF

Director, UAF Jazz Festival, 2007
Music Department Woodwind Professor search, 2006
Coordinator, 2006 UAF New Music Festival, 2006
Conference Chair, UAF Internet2 Day, 2006
Producer, UAF Internet2 Day Concert, Featuring New World Symphony, USC, 2006
Chair, Music Department Woodwind Professor search, spring 2006
Coordinator, 2005 UAF New Music Festival, with the Robin Cox Ensemble. February 2006
Music Department Music Education search committee, spring 2004
Coordinator, 2004 UAF New Music Festival, with guest artist Stephen Drury. February 2006
Music Department Graduate Student Coordinator, 1999-present
Arts Technology Lab Administrator for Music Department, spring 2003-present
Music Department Trumpet search committee, Spring 2003
Music Department Woodwind search committee, Spring 2002
Editorial Committee, University-Wide Accreditation Report, 2001

University Service, UAF, Cont'd

Designer and Administrator, Music Department Website, Fall 1999-present
Director, Music Division, UAF Summer Fine Arts Camp, 1997-1999
UAF Faculty Senate, 1996-1999
Chair, Faculty Senate Legislative Affairs Committee, 1996-1999
Director, UAF Commencement with the World Beat Ensemble, 1996-present

Community Service

Member, Board of Directors, Fairbanks Summer Arts Festival, 2005 to present
Drums Of Knowledge tours to rural Alaskan schools, 2002-05
Board of Directors, Fairbanks Arts Association, 1996-98
Chair, Performing Arts Committee, Fairbanks Arts Association, 1996-98

WEBSITES

Donald Tavel Arts and Technology Center	http://music.iupui.edu/tavel/
Auksalaq Telematic Opera	http://auksalaq.org/
Big Robot Ensemble	http://www.bigrobot.org/
Intermedia Festival	http://music.iupui.edu/intermedia/
Telematic Collective	http://telematiccollective.org/main/
Scott Deal Website	http://scottdeal.net/

PROFESSIONAL AFFILIATIONS

Percussive Arts Society
International Computer Music Association
Electronic Music Foundation
College Music Society
Association of Technology Music Instructors (2002-08)
Music Educator's National Conference (1995-07)

Endorsements

Yamaha Performing Artist, Black Swamp Percussion Artist

REFERENCES

Darrell Bailey, Ed.D.
Professor of Music
Department of Music and Arts Technology
Indiana University Purdue University Indianapolis
dbailey@iupui.edu

Stuart Gerber, DMA
Associate Professor, Percussion
Georgia State University School of Music
swgerber@gsu.edu

Elainie Lillios, DMA
Professor of Composition and Theory
School of Music, Bowling Green State University
lillios@bgsu.edu

CURRICULUM VITAE

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Fax #: 1-317-278-2590

E-mail Address: frees@iupui.edu

EMPLOYMENT HISTORY

Current Appointment:

Spring 2014: Professor, Department of Music and Arts Technology

Research interests - Interdisciplinary studies in music education; interactive televised instruction for distance learning; interactive computer-based instruction in string instruction; curricular integration

Previous Appointments:

Spring 2009 to 2014: Professor, Chair, Department of Music and Arts Technology

2006-2008: Professor, Head, Graduate Studies, Indiana University School of Music at IUPUI

1999 -2006: Associate Professor, Head, Graduate Studies in Music, Indiana University School of Music at IUPUI

1996-1999: Associate Director, School of Music, Graduate Studies, University of Northern Iowa

- 1991-1996: Chair of Music Education, School of Music, Associate Professor, University of Northern Iowa
- 1986-1991: Program Director of Music Education, Associate Professor of Music and Music Education, New York University (teaching included dissertation supervision, doctoral courses in music education research, research and bibliography, music technology, foundations of music education)
- 1978-1986: Lecturer in Music, University of Queensland, Australia (teaching duties included string pedagogy, school conducting and orchestration, music history, music theory, and music education research methods)
- 1974-1977: English as a Second Language Teacher, Los Angeles Unified School District
- 1971-1977: Instrumental Music and Substitute Teacher, Los Angeles Unified School District, Long Beach, Torrance, Palos Verdes, Rolling Hills, and Bellflower School District

Other Appointments:

- Fall 2012 Visiting Professor, Sibelius Academy, Helsinki, Finland
- Fall 2012 Visiting Researcher, McGill University, Montreal, Canada
- Spring 2004: Acting Director, Indiana University School of Music at IUPUI
- Spring 1986: Adjunct Professor, St. John's University, New York
- Fall 1984: Visiting Professor, School of Music, University of Illinois at Urbana-Champaign

EDUCATIONAL BACKGROUND

Degrees:

- 1977: Doctor of Musical Arts in music education, University of Southern California, School of Music, Los Angeles
- 1971: Bachelor of Music in music education, Performer's Certificate in double bass, SUNY College at Potsdam, Crane School of Music, New York

Teaching Certifications:

- 1977: State of New York: Music K-12 (Permanent Certification)

1977: State of California: Music 1-12, Standard Secondary (Life credential)

PROFESSIONAL AFFILIATIONS

American Educational Research Association
American Society of Engineering Education
Association for Technology in Music Instruction (ATMI)
College Music Society
International Society for Music Education (ISME)
Indiana Music Educators Association (IMEA)
Kappa Delta Pi
Phi Delta Kappa
Phi Mu Alpha Sinfonia
Pi Kappa Lambda
Rotary Club of Indianapolis

Professional Offices:

2007-present: Reviewer, Journal of Educational Computing Research
2007-present: Editorial Advisory Board, Turkish Journal of Music Education
2006-2011: Editorial Board, Journal of Music, Technology and Education (U.K.)
2006-present: Editorial Board, Australian Online Journal of Arts Education
2004-present: Member, Internet2 Performing Arts Advisory Committee
2003-2010: Advisory Board Member, Technology in Music Education (TI:ME)
2001-present: Member, Technology Program Committee, Indiana Music Educators Association
2000: Acting Board Chair (representing music education), College Music Society
1999-present: IUPUI Campus Representative for the College Music Society
1998-present: Advisory Board Member for Music Education, College Music Society
1993-1999: Music in our Schools Month Chair, Iowa Music Educators Association
1993-1999: Music Technology Chair, Iowa Music Educators Association
1992: Acting Editor, International Newsletter of the Association for Technology in Music Instruction
1990: Editorial Consultant, double bass repertoire, for New York State School Music Association Manual
1989-90: Chair, New York City/Long Island Action Committee on Research, Council on Music Teacher Education Programs
1985: State Chairman, Australian Society for Music Education (Queensland)
1983-1984: Vice President, Queensland String Bass Society
1983-1984: Coordinator of the National Research Group, Association of Music Education Lecturers
1983-1984: Executive Committee Member, Musicological Society of Australia (Queensland Chapter)
1980-1982: National Editor, *Australian String Teacher*

- 1981: Section Secretary, Musicology, 51st Congress, Australia/New Zealand Association for the Advancement of Science, Brisbane, University of Queensland
- 1981: Conference Committee, Association of Music Education Lecturers, Kelvin Grove College of Advanced Education, Brisbane, Queensland
- 1980: President, Haydn Society of Queensland

Special Appointments:

- 2013-present Affiliate Member, Center for Interdisciplinary Research in Media and Music Technology, McGill University, Montreal, Canada
- 2011-2013 External Examiner, Singapore Polytechnic
- 2009-2011 External Examiner, Singapore Polytechnic

RESEARCH AND SCHOLARSHIP

Grants for Research and Professional Development:

- July 2012: Indiana University, Overseas Conference Fund Grant, to attend the 2012 International Society for Music Education Conference, Thessaloniki, Greece July 15-20, 2012 (\$300)
- May 2010: IUPUI, Integrative Department Grant, for the Department of Music and Arts Technology, Summer 2010-Spring 2012 (value \$20,000)
- July 2010: Indiana University, Overseas Conference Fund Grant, to attend the 2010 International Society for Music Education Conference, Beijing, China August 1-6, 2010 (value \$1000)
- May 2008: Indiana University, Overseas Conference Fund Grant, to attend the 2008 International Society for Music Education Conference, Bologna, Italy, July 20-25, 2008 (value \$700)
- May 2005: Indiana University, New Frontiers in Arts & Humanities Program, Creating an Internet2 Music Agenda for Performance, Education and Research in Indiana, (value of \$19,995)
- June 1999: UNI Summer Mini-Grant: An Exercise in Curricular Integration: Redesigning the course, Introduction to Music Education (570:050) (value of \$1200)
- Fall 1997: UNI Graduate College Project Grant: Interactive Televised Instruction - An Emerging Mode of Instructional Delivery (value of \$500), book project

- June 1997: UNI Summer Mini-Grant: Integrating Web-Based Teaching Applications with Two Graduate Music Education Courses over the Iowa Communications Network (value of \$1200)
- June 1996: UNI Summer Integrating Musical Acoustics Principles into Music Education Mini-Grant Curricula (Co-investigator, Dr. Peter Hoekje -value of \$1100)
- June 1995: College of Humanities and Fine Arts Dean's Summer Research Grant: An Analysis of UNI Graduate Programs offered through the ICN with the Objective of Developing an Instrument for Identifying Student Learning Effectiveness (value of \$300)
- June 1994: UNI Research Grant Music: Technology for the School of Music Curriculum Project (shared grant value of \$2000):
- June 1993: UNI Summer Mini-Grant: A Multimedia Instructional Template for the General Education Course, Our Musical Heritage (value of \$1100):
- 1988-1991: Whitaker Foundation: Tracking Violinists' Vibrato Technique Using Electromyographic, Videotape, and Computer-based Digitizing Technology (co-investigator)
- 1987-1988: National Endowment for the Arts awarded to the New York University School of Education, School-based Secondary Arts Teacher as Researcher, for which this researcher was a consultant (value of \$1.4 million)
- 1985-1986: University of Queensland Research Grant, Program in Standard Music Notation for Interpreting MIDI Data from the Fairlight Voicetracker Pitch Extractor (value of A\$3000)
- 1982: University of Queensland Humanities Grant, Electronically Collate 8000 Unpublished solo violoncello works of the late 17th-early 19th centuries from the Pyron Collection (value of A\$2000)

Scholarships and Honors:

- 2008: The Trustees Teaching Award (IUPUI)
- 2007: Innovative Research Recognition Award, Indiana University School of Music at IUPUI
- 2006: Who's Who in America (60th Edition)
- 2005: Who's Who in American Education (7th ed., 2006-2007)
- 2004: Favorite Professor Award, (IUPUI Jaguars)
- 2003: The Trustees Teaching Award (IUPUI)
- 2002: Innovative Teaching Recognition Award, Indiana University School of Music at IUPUI

2000: Dictionary of International Biography (29th Edition)
 2000: Who's Who in the 21st Century
 2000: 2000 Outstanding Scholars of the 21st Century
 1999: Who's Who in the World (17th Edition)
 1988: International Who's Who in Music
 1988: International Men of Achievement
 1974-1976: Friends of Music Scholarship, University of Southern California, School of Music, for dissertation work
 1971-1974 National Defense Education Act, Title IV Fellowship

Publications:

Vetted

- Rees, F. J. (2011). Redefining music technology in the United States. *Journal of Music Technology & Education*, 4, (2 & 3), 149-155.
- Rees, F. J. (2006). Musiikkikasvatusteknologian tila Yhdysvalloissa. In J. Ojala, M. Salavuo, M. Ruippo, and O. Parkkila (Eds.). *Musiikkikasvatus Teknologia* (pp. 383-391). Keuruu (Finland): Otavan Kirjapaino Oy.
- Rees, F. J. (2003). Hitting the right note with videoconferencing. *Syllabus*.
<http://www.syllabus.com/mag.asp?month=6&year=2003>.
- Rees, F. J. (2003). Research using the Internet for teaching music at a distance in the United States. *Australian Association for Research in Music Education: Proceedings of the XXIII Annual Conference*, (pp. 105-110), Melbourne, Australia.
- Hickey, M & Rees, F. (Fall 2002). Developing a model for change in music teacher education. *Journal of Music Teacher Education*, 12, (1). Also online at
<http://www.menc.org/mbronly/publication/JMTEfa02features4.html>
- Rees, F. J. (2002). Distance learning technologies and their applications to music education. In R. Colwell & C. Richardson (Eds.), *Second Handbook of Research for Music Teaching and Learning* (pp. 257-273). New York: Oxford University Press.
- Gordon, D. G., Rees, F. J. & Leong, S. (2000). An evolving technology: Interactive televised instruction's challenge to music education. *Australian Journal of Music Education*, 2000 (1), 40-51.
- Hickey, M., & Rees, F. J. (Fall 2000). Designing a blueprint for curricular reform in music teacher education. *College Music Symposium*, 40.
<http://www.music.org/ProfActiv/Pubs/Sym/Vol40/mhickeyarticle/index.htm>
- Rees, F. J. & Fanelli, M. (Summer 1997). ITVI as a tool for cultivating teacher observation skills. *American String Teacher*, 47 (3), 35-37.
- Rees, F. J. & Fanelli, M. (Winter, 1997). Using interactive televised instruction to extend our work in string education. *Stringendo: Journal of the Australian String Teachers Association Ltd.*, 19, (1) 21-25.

- Fanelli, M., Rees, F. J. & McDonald, T. (1996). Using interactive televised instruction for student observation of expert string teaching. *Midwest National Association of Laboratory Schools (NALS) Conference Proceedings*, 12-16.
- Rees, F. J. (1995). Being on the cutting edge if not the center of attention: Post-graduate music education on the Iowa Communications Network. In Oliver, R. & Wild, M. (Eds.), *Learning without limits: Proceedings of the Australian Computers in Education Conference 1995*, (Volume I, pp. 119-127), Perth, Western Australia.
- Rees, F. J. (1995). Music education on the Iowa Communications Network. In Lee, H. & Barrett, M. (Eds.), *Honing the Craft: Improving the Quality of Music Education, Australian Society for Music Education 10th National Conference Proceedings*, (pp. 207-211, 219), Hobart, Tasmania.
- Rees, F. J. & Downs, D. A. (1995). Interactive television and distance learning. *Music Educators Journal*, 82 (2), 21-25.
- Rees, F. J. & Ripp Safford, B. (1995). Iowa's approach to distance learning. *Technological Horizons in Education Journal*, 22 (11), 63-66.
- Rees, F. J. & Michelis, R. M. (1991). Identifying musical performance behavior in instrumentalists using computer-based sound spectrum analysis. *Bulletin of the Council for Research in Music Education*, Fall (110), 53-66.
- Rees, F. J. & Michelis, R. M. (1990). The description of a process for identifying musical performance behavior in instrumentalists using computer-based sound spectrum analysis, with implications for an interactive acoustic musical system. In G. Goos, & J. Hartmanis (Eds.). *Lecture Notes in Computer Science: Vol. 438. Computer Assisted Learning* (pp. 453-466). Berlin: Springer-Verlag.
- Rees, F. J. (1985-86). A PLATO-based videodisc self-instructional program for directing the development of string vibrato technique. *Journal of Educational Technology Systems*, 14 (4), 283-296.
- Rees, F. J. (1984). Multiculturally based experiences with music learning: Australian research. *New Education*, 6 (2), 95-105.
- Rees, F. J. (1982). The use of self-paced televised instructional programming in music and its implications for Australian education. *Bulletin of the Council for Research in Music Education*, (70), 12-26.
- Rees, F. J. (1980). 51st Congress of ANZAAS. *The Australian Journal of Music Education*, 27, 64.

Unvetted

- Rees, F. J. (2001). Delivering a graduate music degree program online Using Real-Time Video. *Syllabus Fall 2001 Proceedings*, Boston, Massachusetts. www.syllabus.com/fall2001/proceedings.asp
- Rees, F. J. (1999). A status check on music education. *Iowa Music Educator*, 52 (2), 22, 24, 28.
- Rees, F. J. (1999). Algona receives exemplary music program award *Iowa Music Educator*, 52 (2), 12.
- Rees, F. J. (1999). New software and a twist that paid off. *Iowa Music Educator*, 52 (2), 18.
- Rees, F. J. (1999). Ruth Ann Tobey is honored as outstanding administrator. *Iowa Music Educator*, 52 (2), 12, 18.
- Rees, F. J. (1998). Looking past computers toward a new technology for music education. *Iowa Music Educator*, 52 (1), 24-25.
- Rees, F. J. (1998). From composition to designing interactive music lessons: This year's technology sessions at the IMEA conference. *Iowa Music Educator*, 51 (2), 30.
- Rees, F. J. (1998). Kudos for Mark Farland: An outstanding administrator in support of music education. *Iowa Music Educator*, 51 (2), 26.
- Rees, F. J. (1997). Applications for Iowa exemplary music program and outstanding administrator for support of music education are being accepted. *Iowa Music Educator*, 50 (2), 12.
- Rees, F. J. (1997). IMEA hosts computer lab sessions for Iowa music educators at Ames conference. *Iowa Music Educator*, 50 (2), 24, 26.
- Rees, F. J. (1997). Ottumwa community schools receive the Iowa exemplary music program award. *Iowa Music Educator*, 50 (2), 10-11.
- Rees, F. J. (1996). Adding a new wrinkle: Hands-on workshops of music software and information media at the IMEA conference. *Iowa Music Educator*, 50 (1), 12-13.
- Rees, F. J. (1996). A preliminary evaluation of the University of Northern Iowa Master of Music program in music education on the Iowa Communications Network. In Walls, K. (Ed.), *Technological Directions in Music Education Conference Proceedings* (pp. 34-38). San Antonio: The Institute for Music Research, University of Texas at San Antonio.
- Rees, F. J. (1996). Music technology at the IMEA Conference: Resources of ever-increasing sophistication. *Iowa Music Educator*, 49 (2), 24.
- Rees, F. J. (1996). The Iowa exemplary music program and outstanding administrator in support of music education program awardees *Iowa Music Educator*, 49 (2), 12-13.
- Rees, F. J. (1995). A continuing first: The Iowa Communications Network. *Iowa Music Educator*, 48 (1), 18.
- Rees, F. J. (1995). A friendly thought about music in our schools. *Iowa Music Educator*, 48 (1), 12.

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- Rees, F. J. (1995). Welcome the 1994 exemplary music program awardee: The Norwalk community school district. *Iowa Music Educator*, 48 (2, January/February), 10-11.
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- Rees, F. J. (1994). Redefining music education in concept and action. Educational Leadership in the Arts Conference Proceedings. Chapel Hill: University of North Carolina. In I. Olson (Ed.), *Educational Leadership in the Arts Music as Art, Science, and Entertainment Proceedings of the September 1993 Symposium* (pp. 26-33), Chapel Hill, North Carolina.
- Rees, F. J. (1994). Teachers forum: Teaching music on the Iowa Communications Network. *ED: Education at a Distance*. United States Distance Learning Association, 8 (3, March), 22.
- Rees, F. J. (1993). An integrative model for using computer-aided instructional software within the undergraduate musicianship course sequence. *Music Curriculum and Current Technology: Models for Application Conference Proceedings*. Duluth, Minnesota: University of Minnesota-Duluth, 133-140.
- Rees, F. J. & Bejjani, F. J. (1990). Videotape and electromyographic procedures for analyzing performance in a healthy pianist. *School Music News*, 53 (7), 43-46.
- Rees, F. J. & Michelis, R. M. (1990). Analyzing single and multiple pitch performance behavior in instrumentalists using computer-based sound spectrum analysis procedures. *College Music Curriculum and Current Technology: Models for Application Conference Proceedings*. Duluth: University of Minnesota-Duluth, 1-12.

- Rees, F. J. (1987). The incorporation of remediation procedures for an individualized interactive videodisc-based program for learning vibrato technique on the violin. In R. Stevens (Ed.), *Computer Technology in Music Education: The Australian Beginning* (pp. 27-43). Victoria: Deakin University.
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- Rees, F. J. (1981). A commentary on the documentary report on the Ann Arbor Symposium. *The Australian Journal of Music Education*, 29, 51-54.
- Rees, F. J. (1981). Proposed models for research design and reporting format in music education. *AMEL-ASME National Conference "Music in Teacher Education" Proceedings* (pp. 88-101). Melbourne: University of Melbourne, Australia.
- Rees, F. J. (1980-82). The role of television in string instruction: Parts I-III. *Australian String Teacher*, 4 (1), 26-28; 5 (3), 10-12; 5 (4), 12-16.
- Rees, F. J. (1980). The use of diagnostic testing vs. evaluative testing in the core curriculum. *AMEL-ASME National Conference "Music in the Core Curriculum" Proceedings*. Brisbane: University of Queensland, May, 57-63.

Conference Papers and Presentations:

- Rees, F.J. The Status of Music Technology in the US and the Types of Curricular that have been Developed. Mianyang Normal University, Mianyang, China, March 20, 2014.
- Rees, F. J. The Impact that Music Technology can have on the Neuroscience of Music and Music Cognition Research, Mianyang Normal University, Mianyang, China, March 18, 2014.
- Rees, F. J. Current Music Technology Applications in the US and the Logical Directions for Their Continuing Development. Mianyang Normal University, Mianyang, China, March 17, 2014.
- Rees, F. J. The Potential Impact of Music Technology on Interdisciplinary Studies Involving Music, Association for Technology in Music Instruction, Cambridge, Massachusetts, October 31, 2013.
- Rees, F. J. Translating Research in Music Cognition and Neuroscience into Practice through Music Technology. Association for Technology in Music Instruction, Cambridge, Massachusetts, October 31, 2013.

- Rees, F. J. The Potential Impact of Music Technology on Interdisciplinary Studies Involving Music, College Music Society, Cambridge, Massachusetts, November 2, 2013.
- Rees, F. J. The Collaboratory in Practice, Council of Chairs, Directors and Deans, Purdue School of Engineering and Technology, IUPUI, March 5, 2013.
- Rees, F. J. Music Technology as the Means to Connect Research in Music Cognition, Neuroscience, and the Neurocognition of Music for Professional Practice, Centre for Interdisciplinary Research in Media and Music Technology, McGill University, Canada, November 30, 2012.
- Rees, F. J. Driving Toward Synthesis: Using Technology to Demonstrate Music Learning in Our Students (online presentation and panel from Canada). National Association of Schools of Music Meeting, Midwest Region 5, San Diego, California, November 19, 2012.
- Rees, F. J. Keynote Address. Distance Education and Production in Music: Past, Present, and Future. College Music Society Pre-Conference on Distance Learning, November 14, 2012.
- Rees, F. J. Audio Engineering, Music Technology, and Beyond. Singapore Polytechnic, Singapore, November 2, 2012.
- Rees, F. J. The Future of Music Programs in the US: Implications for Finnish Music Education. Sibelius Academy, Helsinki, Finland, September 24, 2012.
- Rees, F. J. Music Technology's Role in Cognitive Neuroscience Research, Department of Psychology, University of Helsinki, Helsinki, Finland, September 18, 2012.
- Rees, F. J. New Ways of Teaching and Learning (online presentation from Finland). Lithuanian University of Educational Sciences, Vilnius, Lithuania, September 18, 2012.
- Rees, F. J. Cultivating Music Technology as an Academic Discipline. University of Jyväskylä, Jyväskylä, Finland, September 13, 2012.
- Rees, F. J. The Past, Present, and Future of Music Programs in the US - with Implications for Finnish Music Education. Tampere Conservatory of Music, Tampere, Finland, September 10, 2012.
- Rees, F. J. Symposium: Establishing a Working Agenda for the Music Technology SIG, 30th ISME World Conference on Music Education, Thessaloniki, Greece, July 15-20, 2012.
- Rees, F. J. Poster Session: What is Music Technology? 30th ISME World Conference on Music Education Thessaloniki, Greece, July 15-20, 2012.
- Rees, F. J. Distance Learning and Conduits for Music Technology. Musiikin ja taiteiden TeknoDida 2011, Orivesi, Tampere, Finland, September 23-25, 2011.

- Rees, F. J. Enduring Outcomes on Learning at a Distance in Graduate Music Programs. Music Anywhere, Anytime: International Symposium on Synchronous Distance Learning (online conference), October 5-6, 2011.
- Rees, F. J. What We Hear is Not How We Hear: Implications of Cognition and Neuroscience on Music Technology, 21st Annual International Music Technology Conference and Workshop, Department of Music and Arts Technology, IUPUI, June 22-25, 2011.
- Rees, F. J. & Erdman, K. R. Technology, Licensing and the Future of the Music Industry. Wired: Our Infatuation with Technology Conference. Indiana University Purdue University Indianapolis, Indianapolis, Indiana, February 12, 2011.
- Rees, F. J. Employing Adobe's Connect Pro Meeting Software for Blended Learning with Music Students. Web-based Tools for Teaching and Learning II. Association for Technology in Music Instruction Conference, Minneapolis, Minnesota, September 23-26, 2010.
- Rees, F. J. Distance learning and online performance opportunities for music educators, 29th International Society for Music Education World Conference, Beijing, China, August 1-6, 2010.
- Rees, F. J. & Ruippo, M. Electronic Conduits for Music Teaching and Learning. 29th International Society for Music Education World Conference, Beijing, China, August 1-6, 2010.
- Rees, F. J. Distance Learning and Online Performance Opportunities for Music Educators. 29th International Society for Music Education World Conference, Beijing, China, August 1-6, 2010.
- Rees, F. J. Music technology as a transformational agent. 20th International Music Technology Conference and Workshop, Department of Music and Arts Technology, IUPUI, June 23-26, 2010.
- Rees, F. J. Keynote Address: Are We Ready to Design a Comprehensive Research Agenda for Music Education? Multidisciplinary Research in Music Pedagogy: 2010 International Conference, University of Ottawa, Ottawa, Ontario, Canada, May 26-29, 2010.
- Rees, F. J. Teaching Music On-campus and Online Students Worldwide Using Videostreaming. United States Distance Learning Association National Conference, St. Louis, Missouri, May 2-5, 2010.
- Rees, F. J. Creating a Network of Music Educators in Indiana, Indiana Music Educators Association State Music Convention, Indianapolis, Indiana, January 22-24, 2009
- Rees, F. J. Keynote Speaker. Creativity and the Prosumer: Challenges for 21st Century Interdisciplinary & Creative Arts Education and Parenting Summit (ICAES), Hong Kong, November 26-29, 2008

- Rees, F. J. Combining Online and On-campus Student Populations using Live Videostreaming in an Undergraduate Film Music Course, Association for Technology in Music Instruction Conference, Atlanta, Georgia, September 25-28, 2008.
- Rees, F. J. Taking the Next Step in Indiana for Using the Internet and Internet2 in Music Performance, Research, and Teaching. Bob Dixon (Ohio State University), Session Chair. Using the Internet2 for Distance Teaching and Learning. (Online videoconferencing presentation.) 22nd Annual Conference on Distance Teaching and Learning. Madison, Wisconsin, August 2-4, 2006.
- Rees, F. J. Using the I2 Highway for Music Performance, Research and Teaching. Solutions 2006 Conference, Indiana University-Purdue University at Indianapolis, May 18, 2006.
- Rees, F. J., Brimmer, T., & Clark, F. Symposium 2006: First Stop Indiana. Susan Scott (Indiana Higher Education Telecommunications System) Session Chair. Scaling the Adoption of Advanced Applications. Spring 2006 Internet2 Member Meeting, Arlington, Virginia, April 24-26, 2006.
- Rees, F. J. Using the Internet2 highway for music teaching, performance, and scholarship. 2006 Indiana Music Educators Association Convention, Indianapolis, January 12-14, 2006.
- Rees, F. J. Toward the International Music Highway: Symposium 2006: First Stop Indiana. Susan Scott, Session Chair, I24U: Plugging into Internet2. 2005 IHETS Summit Conference. Indianapolis, Indiana, November 9, 2005.
- Rees, F. J. Internet2 for Music Performance, Research and Teaching. 15th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 22-25, 2005.
- Rees, F. J. & Smith, K. H. Implementing technical support for live videostreaming and Internet-based videoconferencing using multimedia for music teaching. Association for Technology in Music Instruction Conference, San Francisco, November 4-7, 2004.
- Rees, F. J., Peters, G. D., & Sterling, J. Teaching and learning collaboratively at a distance. San Jose, California, Syllabus National Conference, July 28-August 2, 2003.
- Rees, F. J. Rees. Lessons learned: Challenges of videoconferencing and teaching music over the Internet. Kuopio, Finland, MOVE Conference, April 5, 2003 (Internet transmitted presentation).
- Rees, F. J. & Brimmer, T. Interactive choral performance at a distance. Indiana Music Educators Conference, January 10-11, 2003. (Included Internet videoconferencing from Indianapolis to Kuopio, Finland).

- Rees, F. J. Delivering a graduate music degree program online using real-time video streaming and a course management system. Syllabus Fall 2001, Danvers, Massachusetts, November 29-December 2, 2001.
- Rees, F. J. Using Internet-based streaming video and course management tools to address the need for student/teacher interaction in distance learning. Forty-Fourth Annual Meeting, Association for Technology in Music Instruction, Santa Fe, New Mexico, November 15-18, 2001.
- Rees, F. J. & Gilbert, J. V. Distance collaboration for making, teaching, and learning music. Association for Technology in Music Instruction/Toronto 2000 Conference, November 2-5, 2000.
- Rees, F. J. & Fanelli, M. Implications of using distance learning technologies for teaching at a distance and on-campus teaching. International Society for Music Education 2000 Conference, Edmonton, Canada, July 17-22, 2000.
- Rees, F. J. Distance learning: successes and pitfalls. Music Educators National In-Service Conference. Washington D.C., March 2000.
- Rees, F. J. & Fanelli, M. Using interactive televised instruction for on campus teaching: fostering student observation skills for string instruction, Association for Technology in Music Instruction, Denver, Colorado, October 14-17, 1999.
- Rees, F. J. & Hickey, M. An open forum: designing a blueprint for curricular reform in music teacher education. College Music Society National Conference, Denver, Colorado, October 14-17, 1999.
- Rees, F. J., Tymas-Jones, R., & Deal, J. Distance learning and music. National Association of Schools of Music annual meeting. Boston, Massachusetts, November 22-24, 1998.
- Rees, F. J. & Clark, F. Using videoconferencing and videostreaming tools via the Web for music instruction. The College Music Society/Association for Technology in Music Instruction Conference, San Juan, Puerto Rico, October 22-25, 1998.
- Rees, F. J. Distance learning: interactive music instruction on the Web. 56th National Biennial In-Service Conference Music Educators National Conference, Phoenix, Arizona, April 15-18, 1998.
- Rees, F. J. What the literature says about interactive televised instruction with implications for music teaching and learning. College Music Society/Association for Technology in Music Instruction, Cleveland, Ohio, November 13-16, 1997.
- Rees, F. J. & Vallentine J. Graduate education on the Iowa Communications Network: A collaborative exercise in interactive televised instruction. Educomm '97, Minneapolis, Minnesota, October 28-31, 1997.

- Rees, F. J. Letting the dog wag the tail: Formulating a coherent research tradition in music education. American Educational Research Association, Chicago, March 24-28, 1997.
- Fanelli, M., Rees, F. J. & McDonald, T. Using interactive televised instruction for student observation of expert string teaching. Midwest Regional National Association of Laboratory Schools Conference, The University of Northern Iowa Malcolm Price Laboratory School, October 18, 1996.
- Rees, F. J. A preliminary evaluation of the University of Northern Iowa's Master of Music program in music education on the Iowa Communications Network. Technological Directions in Music Education Conference, The Institute for Music Research, The University of Texas at San Antonio, February 8-10, 1996.
- Rees, F. J. Interactive televised instruction: Stepping into a new era of music education. College Music Society/Association for Technology in Music Instruction, Portland, Oregon, November 9-12, 1995.
- Rees, F. J. Being on the cutting edge if not the center of attention: Post-graduate music education on the Iowa Communications Network. Australian Computers in Education Conference 1995, Perth, Australia, July 9-13, 1995.
- Rees, F. J. Music education on the Iowa Communications Network. Australian Society for Music Education 10th National Conference, June 28-July 2, 1995, Hobart, Australia.
- Rees, F. J., Peters, G. D. The development of a new curricular model for music education. Twenty-First Biennial World Conference, International Society for Music Education, Tampa, Florida, July 18-23, 1994.
- Rees, F. J. Redefining music education in concept and action. Educational Leadership in the Arts Conference, University of North Carolina-Chapel Hill, September 24-26, 1993.
- Rees, F. J. An integrative model for using computer-aided instructional software within the undergraduate musicianship course sequence. Music Curriculum and Current Technology: Models for Application Conference, University of Minnesota-Duluth, July 25-28, 1993.
- Rees, F. J. Teaching string technique – an interactive system. New York State School Music Association Conference, Concord Hotel, Kiamesha Lake, New York, November 25-28, 1990.
- Rees, F. J. & Michelis, R. M. Analyzing single and multiple pitch behavior in instrumentalists using computer-based sound spectrum analysis procedures. College Music Curriculum and Current Technology: Models of Application, University of Minnesota, Duluth, August 2-4, 1990.

- Rees, F. J. & Michelis, R. M. The description of a process for identifying musical performance behavior in instrumentalists using computer-based sound spectrum analysis, with implications for an interactive acoustical musical system. Third International Conference on Computer-Assisted Learning (ICCAL '90), Hagen, Germany, June 11-13, 1990.
- Rees, F. J. The development of a computer-driven sound recognition system for identifying pitch, volume, and timbral data in instrumental music teaching. The College Music Society/Sonneck Society, Northeast Chapter, Toronto, Canada, April 18-22, 1990.
- Rees, F. J. Constructing a database of sound profiles for interactive music instruction with acoustical instruments using pitch extraction and sound spectrum analytical processes, College Music Society National Conference, St. Louis, Missouri, October 11-15, 1989.
- Rees, F. J. The development of a computer-driven, interactive program for teaching vibrato to beginning violinists, 14th World Conference of the International Council for Distance Education, Oslo, Norway, August 10-16, 1988.
- Rees, F. J. Music learning vs. music training – what the artist is that the technician is not. National Conference of The Australian Society for Education through the Arts, Brisbane, January 1985.
- Rees, F. J. A proposed set of research topic priorities for Australian postgraduate music education. Seventh National Conference of the Association of Music Education Lecturers in Launceston, Tasmania, May 1984.
- Rees, F. J. Musical self-expression and its role in compensating for acoustic mass media effects in music education. ISME seminar on “The Impact of the Mass Media on Music Education and Teacher Training,” Madrid, Spain, July 1982.

Reviews:

Blind reviewer. International Society for Music Education, Music Technology Special Interest Group. Proposals for the Music Technology SIG Symposium in July 2014. Reviews completed in December 2013.

Blind reviewer. A new method for identifying authorship of doubtful musical pieces (MIAMP). A comparative analysis with data mining methods. *Journal of Music Technology and Education*, October, 6, 2013.

Contracted doctoral thesis reviewer (Ph.D). Lee, C. *A sustainable ecosystem for software development, software business and music Education*. Hong Kong Institute of Education, Hong Kong, October 4, 2013.

Blind reviewer. Article for *Research in arts education*. Taiwan, August 2009.

Contracted doctoral thesis/folio review (Ph.D). McDowall, J. *Technology and music in the early years of school*. Deakin University, Melbourne, Australia, March 2007.

Contracted doctoral thesis review (Ph.D). Berry, A. M. *A study of motivation through repertoire in intermediate cello students*. The University of Queensland, Brisbane, Australia, October 2006.

Contracted master's thesis review (M.S.). Lewis, S. *MeloDict: An intelligent tutoring system for melodic dictation*. The University of Western Australia, Perth, Australia, July 2005.

Reviewer, undergraduate research paper submissions, The National Conference on Undergraduate Research 2004, Indiana University-Purdue University at Indianapolis.

Contracted doctoral thesis review (Ph.D.). Kirchhubel, J. *Adolescent music development and the influence of pre-tertiary specialised music training*. Griffith University, Queensland, Australia, June 2003.

Reviewer for music, Merlot Project, Fall 2000-Spring 2001.

Internal Reviewer for Colwell, R. & Richardson, C. *Second handbook of research for music teaching and learning*. (Oxford University Press), Spring/Fall 2000.

Consultant's Report, for Valley City State University Department of Music. North Dakota, *Investigating plausibility of fielding an undergraduate music education course stream between VCSU and Mayville campuses, using the Interactive Video Network (IVN)*. October 12, 1997.

Contracted doctoral thesis reviewer. Leong, S. *The relationship between music competencies perceived as important for novice teachers and the professional expectations of high school music teachers in Australia*. University of Western Australia, May 1996.

Contracted by Worth Publishers to review the CD-ROM package under development for its *Listen* text, December 1994.

Contracted doctoral thesis reviewer, Randall, K. L., *An investigation into the function of special schools for the musically talented adolescent in Australia*. University of Western Australia, October 1992.

PROFESSIONAL ACTIVITIES

Workshops, Seminars, and Panels:

Co-convenor, First Virtual Conference Music Technology Special Interest Group, International Society for Music Education, April 16, 2013.

Consultant and Presenter, Hong Kong Institute of Education, Hong Kong, January 10-19, 2013.

Co-convenor, First Symposium, Music Technology Special Interest Group, 30th International Society for Music Education Conference, Thessaloniki, Greece, July 15-20, 2012.

Panelist, *Online degree programs in music*, NASM Roundtable for Associate Directors/Assistant Deans, National Association of Schools of Music Annual Meeting, November 18-21, 2011.

Panelist, *Ever evolving music education, information and communication technologies engaging music Educators*, Tallin, Estonia, 4th IMC World Forum on Music, September 26-October 1, 2011.

Co-Director, 21 International Conference/Institute on Music Technology, Indiana University, Department of Music and Arts Technology, June 22-25, 2011.

Panelist, *Exploring music technology at the graduate level*, Association for Technology in Music Instruction Conference, Minneapolis, Minnesota, September 23-26, 2010.

Co-Director, 20th International Conference/Institute on Music Technology, Indiana University Department of Music and Arts Technology, IUPUI, Indianapolis, Indiana, June 23-26, 2010.

Symposium Chair, Technology: *Electronic technology and its transformative role in music teaching and learning*, Multidisciplinary Research in Music Pedagogy: 2010 International Conference, University of Ottawa, Ottawa, Ontario, Canada, May 26-29, 2010.

Roundtable Panelist, *Research agenda for music pedagogy*, Multidisciplinary research in Music Pedagogy: 2010 International Conference, University of Ottawa, Ottawa, Ontario, Canada, May 26-29, 2010.

Panelist, Research and Education Discussion, I-Light and Indiana GigaPoP Higher Education Networking Community Workshop 2009, IUPUI, Indianapolis, October 28-29, 2009.

Co-Director, 19th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 24-27, 2009.

Panelist, *Taking Music Online*, Music Education Week in Washington, DC, MENC, June 19-21, 2009.

Panelist, Innovative Solutions for Reaching your Students: A Faculty Panel.
Power Up Your Pedagogy: Teaching Today's Tech Savvy Student, IUPUI Center for Teaching and Learning, October 17, 2008.

Symposium Participant, *Welcome to METNet: Initiating a New Era of International Collaboration and Cooperation for Music Educators*, 28th World Conference of the International Society for Music Education, Bologna, Italy, July 20-25, 2008.

Co-Director, 18th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 18-21, 2008.

Co-Director, 17th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 20-23, 2007.

Co-Presenter with Timothy Brimmer, Joint Session with Apple/Butler Lab, *Internet Video Conferencing for Musicians*. IMEA Convention 2007, Indianapolis, Indiana, January 19, 2007.

Clinician. *Basics 101 Provides the ABCs of Videoconferencing and Beyond (Emphasis on Low-Cost Non- Internet2 Solutions)*. Pre-Conference Workshop, College Music Society National Conference, San Antonio, Texas, September 13, 2006.

Showcase Clinician. *Using Videoconferencing and the Internet for Collaborative Research in Piano Performance and Pedagogy (Videoconferencing guest, Dr. Gilles Comeau, University of Ottawa, Canada)*. Pre-Conference Workshop, College Music Society National Conference, San Antonio, Texas, September 13, 2006.

Symposium Convenor: *Building an International Community of Educators, Researchers, Performers, and Learners through Music Technology*. Panelists P. Donner (Finland), G. M. d S. Ferreira (United Kingdom), S. Leong (Hong Kong), M. Ruippo (Finland). ISME World Conference 2006, Kuala Lumpur, Malaysia, July 16-21, 2006.

Co-Director, 16th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 21-25, 2006.

Presenter with Doug Smith, *Using Clickers and Video Conferencing*. CMS Music Technology Institute, Illinois State University, Normal, Illinois, June 4-8, 2006.

Symposium Director and Convenor: Symposium 2006: First Stop Indiana. Indiana University School of Music at IUPUI, March 3-4, 2006.

Co-Director, 15th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 22-25, 2005.

Co-Director, 14th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 21-25, 2004.

Session Chair, *Writing Curriculum with the National Standards as the Guiding Force*, MENC's 59th National Biennial In-Service Conference, April 24-18, 2004.

Session Chair, *SGM Roundtable – Curriculum Development in Music Education: A Work in Progress*, MENC's 59th National Biennial In-Service Conference, April 24-18, 2004.

Session Chair, *Using Handheld Computers and PDAs to Facilitate Assessment*, MENC's 59th National Biennial In-Service Conference, April 24-18, 2004.

Co-Director and Session Presenter, 13th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 23-27, 2003.

Co-Coordinator with Maud Hickey, *Leadership Institute for Curricular Innovation in Higher Music Education*, co-sponsored by the College Music Society and the Music Educators National Conference/Society for Music Teacher Education, IUPUI, June 11-15, 2003.

Director and Session Presenter, 12th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 17-21, 2002.

Clinician with Maud Hickey, *Report on the College Music Society/MENC 2001 Institute on Music Teacher Education*, Music Educators National Conference, Nashville, Tennessee, April 13, 2002.

Presenter, *Using Distance Learning In Today's Classrooms: A Discussion and Illustration of Internet-Based Tools*, Indiana Music Educators Association, January 18, 2002.

Presenter with Dr. Timothy Brimmer, *The High School Musician's Electronic Portfolio: Results not Excuses*, Indiana Music Educators Association, January 18, 2002.

Presenter, *Distance Learning Technologies for Corporate Communication and Training*, ConnectTech Conference, Indiana University-Purdue University at Indianapolis, Indiana, December 6, 2001.

Associate Director and Session Presenter, 11th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 18-22, 2001.

Co-Coordinator with Maud Hickey, *Music Teacher Education for this Century: A Working Institute for Change and Innovation in our Profession*, co-sponsored by the College Music Society and the Music Educators National Conference/Society for Music Teacher Education, Northwestern University, June 9-13, 2001.

Clinician, *The Role of Distance Learning for Music Teaching and Learning*, Texas Music Educators Association, San Antonio, February 8, 2001.

Clinician, *Tools for Teaching Music at a Distance*, Texas Music Educators Association, San Antonio, February 8, 2001.

Clinician, *Collaboration as a Discipline in the Academy*, Federation of North Texas Universities, Texas Womens University, Denton, Texas, February 6, 2001.

Clinician, *Recent Research on Studies in Distance learning in Music*, Federation of North Texas Universities, University of North Texas, Denton, Texas, February 6, 2001.

Panelist, *Open Forum in Music Education*, College Music Society/Toronto 2000 Conference, Toronto, Canada, November 4, 2000.

Seminar Presenter, *Music and Distance Education*, Federation of North Texas Universities, Texas Women's University, Denton, Texas, August 31, 2000.

Seminar Presenter, *Research in Distance Education*, Federation of North Texas Universities, University of North Texas, Denton, Texas, August 31, 2000.

Co-Coordinator with G. David Peters and Session Presenter, 10th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 26-30, 2000.

Panelist, *Distance Learning for Music*, chaired by Alan Henderson, Association for Technology Association for Technology in Music Instruction, Denver, Colorado, October 17, 1999.

Seminar Presenter, *Lectures on American Music Education*, St. Petersburg Pedagogical University, St. Petersburg, Russia, October 1-14, 1998.

Clinician, *A Showcase of Iowa Educators' Projects Using Hyperstudio, Powerpoint, and the Web*, Iowa Music Educators Association Conference, Ames, Iowa, November 22, 1997.

Clinician with David A. Williams, *New Teachers for a New Era: Implementing Change*, Collegiate Session, Iowa Music Educators Association Conference, Ames, Iowa November 21, 1997.

Clinician with Michael Fanelli, *Using Interactive Televised Instruction to Extend Curricular Goals*, Iowa Music Educators Association Conference, Ames, Iowa, November 21, 1997.

Clinician, *The World Wide Web and the Music Educator: An Introduction to the Net, Technology Session*, Iowa Music Educators Association Conference, Ames, Iowa, November 23, 1996.

Clinician with David A. Williams, *New Teachers in a New Era*, Collegiate Session, Iowa Music Educators Association Conference, Ames, Iowa, November 22, 1996.

Clinician respondent, *Music, Critical Thinking, and Reform: Classrooms of the Future*, MENC National Biennial In-Service Conference, Kansas City, Missouri, April 18, 1996.

Panelist, *Becoming a True Professional: The Role of Graduate Study*, Eunice Boardman, Presider, Iowa Music Educators Association Conference, Ames, Iowa, November 17, 1995.

Panelist, *An Introduction to Music Education Research*, Australian Society for Music Education 10th National Conference, Hobart, Tasmania, July 29, 1995.

Clinician, 1994 Computer Music Technology Conference & Workshop, Indiana University School of Music at Indiana University-Purdue University at Indianapolis, June 20-24, 1994.

Clinician, *Thriving in the Elementary Music Classroom: A Practical Workshop for Elementary Music Educators*, Drake University, Des Moines, Iowa, June 20, 1994.

Double Bass Clinician, Pre-All-State String Workshop, Iowa String Teachers Association and The University of Northern Iowa String Faculty, School of Music, Cedar Falls, Iowa, October 2, 1993.

Clinician, *Music Technology for the Elementary Music Classroom*, Area Education Agency 7, ART/CAT Lab, The University of Northern Iowa, College of Humanities and Fine Arts, Cedar Falls, Iowa, September 20, 1993.

Double Bass Clinician, Pre-All-State String Workshop, Iowa String Teachers Association and The University of Northern Iowa String Faculty, School of Music, Cedar Falls, Iowa, October 10, 1992.

Clinician, *Current Trends in Music Education, Music Teacher Workshop*, Iowa Music Educators and Area Education Agency 7, Cedar Falls, Iowa, October 5, 1992.

Invited Lecturer and Clinician, Taipei, Taichong, Tainan, Kaochung (in Taiwan), children's music and computer-based music instruction: May 17-31, 1990.

Invited Lecturer and Clinician, Taiwan National Academy of Arts, Taipei, computer-driven instruction, artistic performance disorders, double bass master classes: May 16-24, 1989.

Invited Lecturer, Lin Schools of Music, Taipei, Taichong, Tainan, music for young children: May 25-31, 1989.

Research team member, Summer Institute of the National Arts Education Research Center (supported by the NEA), New York University: July 5-28, 1988.

Invited Orchestra Conductor and String Clinician, Instrumental Music Performance Program, Kelvin Grove State High School, Brisbane, Australia: July 13-20, 1987.

Invited Double Bass Clinician/Performer and Chamber Music Coach, Queensland Department of Education Musically Outstanding (MOST) Camp, Pope Pius XII Seminary, Brisbane, Australia: June 28-July 10, 1987.

Seminar for Roland Corporation on utilizing the Fairlight Voicetracker for sound processing in an interactive learning mode, Brisbane, Australia: December 9-10, 1985.

Research Seminar on interactive videodisc technology and its role in string pedagogy, Deakin University, Melbourne, Australia: August 30, 1985.

Double Bass Clinician/Performer, Queensland Department of Education, Musically Outstanding Students (MOST) Camp, Griffith University, Brisbane, Australia: June 23-30, 1985.

Research Seminar on action research (Music 401), School of Music, University of Illinois at Urbana-Champaign: October 23, 1984.

Undergraduate Music Education Seminar and Graduate Music Education Class (Music 440) on innovations in Australian classrooms and string instruction, School of Music, University of Illinois at Urbana-Champaign: September 24, 1984.

Invited Double Bass, Clinician/Performer, String Summer School, Conservatorium of Music, University of Tasmania, Hobart, Australia: January 18-27, 1984.

Research Seminar, Sixth National Conference of the Association of Music Education Lecturers, Adelaide, Australia: May 13-15, 1983.

Invited Double Bass Clinician/Performer, String Summer School, Conservatorium of Music, University of Tasmania, Hobart, Australia: January 19-28, 1983.

Double Bass Clinician/Performer, Music Department, University of Queensland/Queensland Department of Education with the Mayne String Trio, Brisbane, Australia: September/October 1981.

Invited Conducting Clinician, Queensland State Department of Education, Brisbane, Australia: August 1981.

Professional Service

Adjudicator, solo and ensemble contest. Indiana High School Music Association. Avon, Indiana, February 8, 2014

PhD defense committee. Cheng Lee, *A sustainable ecosystem for software development, software business and music education*, Graduate School, Hong Kong Institute of Education, October 6, 2013.

External Examiner, Singapore Polytechnic, October 29-November 2, 2012.

Adjudicator, high school small ensemble and double bass contest, Indiana High School Music Association, Indianapolis, February 25, 2012.

Session Chair, Future Directions in Technology and Music Literacy in the Classroom, Association for Technology in Music Instruction Conference, Minneapolis, Minnesota, September 23-26, 2010.

Program Committee Member, Association for Technology in Music Education national conference, Minneapolis, Minnesota, September 23-26, 2010

External Examiner, Singapore Polytechnic, Singapore, July 18-25, 2010.

Program Committee Member, Society for Music Perception and Cognition Conference, IUPUI, August 3-7, 2009.

Presenter, Department of Music and Arts Technology's new BSMT program, Campus Day, IUPUI, March 7, 2009.

Adjudicator, high school small ensemble and double bass contest, Indiana High School Music Association, Westfield, Indiana, February 22, 2009.

Adjudicator, high school small ensemble and double bass contest, Indiana High School Music Association, Carmel, Indiana, February 8, 2009.

Adjudicator, high school small ensemble and double bass contest, Indiana High School Music Association, Carmel, Indiana, February 7, 2008.

Adjudicator, high school small ensemble and double bass contest, Indiana High School Music Association, Carmel, Indiana, February 7, 2007.

Program Committee Member, 2008 “Two Greats” SuperRegional Conference Great Lakes and Great Plains Chapters, Illinois State University, Normal Illinois, March 28-30, 2008.

Adjudicator, high school small ensemble and double bass contest, Indiana State School Music Association, Westfield, Indiana, February 3, 2007.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 19-20, 2007.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 13-14, 2006.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 14-15, 2005.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 16-17, 2004.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 13-14, 2003.

MENC Network Mentor for Technology, The National Association for Music Education, January, 2003.

Consultant, National Teaching Development Grant, University of Western Australia, School of Music (Principal Investigator, Dr. S. Leong), Perth, Australia, February 21-March 4, 2002.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 18-19, 2002.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 12-13, 2001.

Session Chair, “You Want me to Teach *What?* Teaching Outside One’s Professional Area, College Music Society/Toronto 2000 Conference, Toronto, Canada, November 1-5, 2000.

Acting Chair for Music Education, College Music Society, January-November, 2000.

Coordinator, Indiana University School of Music at IUPUI display booth, Indiana Music Educators Association Conference, January 13-14, 2000.

Consultant, setting up a Master of Music in music education program using interactive televised instruction, Ohio University, Athens, Ohio, May 17-18, 1999.

Coordinator, music technology sessions for the Iowa Music Educators Conference, Ames, Iowa, November 21-22, 1998.

Session Chair, Music Technology Primer/What is MIDI (Basic Uses of Music Technology in the Music Classroom), SoundTree, Iowa Music Educators Association Conference, Ames, Iowa, November 22, 1998.

Session Chair, Open Session: Hands-on Sampling of New Computer Hardware & Software, Kephardt Music, Iowa Music Educators Association Conference, Ames, Iowa, November 21, 1997.

Committee Member, President's task force on distance learning, University of Northern Iowa, October 1997.

Consultant, to make recommendations on use of the state Interactive Video Network for teaching undergraduate music education courses with a sister campus, Valley City State University, Department of Music, Valley City, North Dakota September 18-21, 1997.

Adjudicator, Solo and Small Ensemble Contest, Strings, Clinton High School, Clinton, Iowa, April 19, 1997.

Judge and Presenter, Iowa Exemplary Music Program Award, (as Music in our Schools Month [MIOSM] Chair, IMEA Board Member), to Ottumwa Public Schools, All-State Concert, Ames, Iowa, November 23, 1996

Session Chair, Advantage Drill Design Program for Marching Band, Band Technology .

Session, Iowa Music Educators Association Conference, Ames, Iowa, November 23, 1996.

Session Chair, Drill Design and PyGraphics 3D, Technology Session, Iowa Music Educators Association Conference, Ames, Iowa, November 22, 1996.

Session Chair, Computer Programs for Music, Technology Session, Iowa Music Educators Association Conference, Ames, Iowa, November 22, 1996.

Session Chair, *Curriculum in the Nineties*, College Music Society National Conference, Atlanta, Georgia, October 24-27, 1996.

Session Chair, *Learning Centered Technologies: What is happening at UNI?* Building a Learning Centered Community Conference, The University of Northern Iowa, Cedar Falls, Iowa, October 3, 1996.

Adjudicator, Large Group Contest, Strings, Bettendorf High School, Bettendorf, Iowa, May 3, 1996.

Clinic Chair, *Internet and Music Teaching: What is the Internet and How does it Work?* Part I, Music Educators National Biennial In-Service Conference (MENC), Kansas City, Missouri, April 19, 1996.

Adjudicator, Small Group and Solo Contest, Strings, Boone High School, Boone, Iowa, April 13, 1996.

Music Clinician, UNI Careers Day, The University of Northern Iowa, Cedar Falls, Iowa, April 4, 1996.

Judge and Presenter, Iowa Exemplary Music Program in the State (as Music in our Schools Month [MIOSM] Chair, IMEA Board Member), to Glidden Ralston Community School, All-State Concert, Ames, Iowa, November 18, 1995.

Member, Program Committee, Association for Technology in Music Instruction, College Music Society/Association for Technology in Music Instruction, National Conference, Portland, Oregon, November 9-12, 1995.

All-State Auditor, Strings, Indianola, Iowa, October 21, 1995
Artists in Schools Committee, Cultural Affairs, Waterloo/Cedar Falls Chamber of Commerce, Fall 1995

Adjudicator, Large Group Contest, Strings, Linn-Mar High School, Linn-Mar/Marion, Iowa, May 5, 1995 CHFA Dean's Liaison, Waterloo/Cedar Falls Chamber of Commerce, Spring 1995.

Presenter, *Teaching on the Iowa Communications Network*, UNI Center for the Enhancement of Teaching, Roger Sell, April 11-12, April 28, 1995.

Adjudicator, Small Group and Solo Contest, Strings, Davenport Central High School, Davenport, Iowa, April 8, 1995.

Judge and Presenter, Outstanding Administrator for Support of Music (as Music in our Schools Month [MIOSM] Chair, IMEA Board Member), to Ms. Ann L. Hart, Allamakee Community School District, Waukon, Iowa, December 8, 1994.

Judge and Presenter, Iowa Exemplary Music Program in the State (as Music in our Schools Month [MIOSM] Chair, IMEA Board Member), to Norwalk Community Schools, All-State Concert, Ames, Iowa, November 19, 1994.

All-State Auditor, Strings, Storm Lake, Iowa, October 22, 1994
Judge and Presenter to Mr. Wendell Miskimins, (As MIOSM Chair, IMEA), Des Moines, April 1993.

Session Chair, *Powerful Environments for Technology and Music*, October 30, 1992, national College Music Society/Association for Technology in Music Instruction, San Diego, California, October 30-November 1, 1992.

Piano soloist, The Neuman Project Genesis: A Collaboration of the Arts (modern dance and ballet, original works in a multi-arts setting), featuring dancers from Ballet Iowa, Co-Motion Dance Theater, and Trudy Martin, in the modern dance work, *Who Cares?*, Grand View College, Des Moines, June 27 and 28, 1992 (three performances).

Music Special Interest Group Delegate, Association for the Development of Computer Instructional Systems (ADCIS) Conference, San Diego, California, October 28-November 1, 1990.

Session Chair, *Musician-Educators for the Future*, October 28, 1990, ATMI Session on Computers in Music Education, Association for Technology in Music Instruction/College Music Society Conference, Washington, D.C., October 25-28, 1990.

Convener, International Society of Bassists Conference, New York University, New York: June 17-23, 1990.

String Adjudicator, New York State School Music Association (NYSSMA), 1989-1991
Educational Consultant, La Guardia High School of the Arts, New York City Public Schools: 1989-91.

Session Chair, *Developing Interactive Videodisc Music Instruction*, October 14, 1988, ATMI Session on Computers in Music Education, College Music Society Conference, Sante Fe, New Mexico, October 13-16, 1988.

Invited Double Bass Clinician/Performer, String Summer School, Conservatorium of Music, University of Tasmania, Hobart, Australia: January 19-28, 1983.

Double Bass Clinician/Performer, Music Department, University of Queensland/Queensland Department of Education with the Mayne String Trio, Brisbane, Australia: September/October 1981.

Invited Conductor Clinician, Queensland State Department of Education, Brisbane, Australia: August 1981.

Musical Performance: Double Bass

Double Bassist, Gershwin – Porgy and Bess, Scholarship Benefit Concert, UNI School of Music, September 25-26, 1998.

Double Bassist, Poulenc – Gloria, Concert Chorale and Festival Orchestra, First Presbyterian Church, Waterloo, Iowa, November 4, 1994.

Double Bassist, Mozart – Eine Kleine Nachtmusik, Tchaikovsky – 1812 Overture, Scholarship Benefit Concert, UNI School of Music, September 30 – October 1, 1994.

Double Bassist, Rossini – Stabat Mater, Concert Chorale and Festival Orchestra, St. Edward's Catholic Church, Waterloo, April 10, 1994.

Principal Double Bassist, Waterloo/Cedar Falls Symphony Orchestra, Chamber Orchestra Iowa, Fall 1991-Spring 1994.

Double Bassist, Bach – Minuet, Schubert – Death and the Maiden, Palestrina – Adoramus Te, Northern University Cello-Bass Ensemble, Orchestra Night, Laurie Busch, Conductor, Malcolm Price Laboratory School, University of Northern Iowa, May 13, 1993.

Double Bassist, Haydn – Die Jahreszeiten, UNI Singers, Sharon Hansen, conductor, UNI School of Music, April 14, 1993.

Double Bassist, Women Composers Concert, Rebecca Burkhardt, conductor, UNI School of Music, March 2, 1993.

Double Bassist, Northern Iowa Symphony Orchestra, Rebecca Burkhardt, conductor, UNI School of Music, March 1, 1993.

Double Bassist, Ron Nelson – Invoking the Powers, Concert Chorale, Bruce Chamberlain, conductor, UNI School of Music, November 9, 1992.

Double Bassist, Scholarship Benefit Concert, UNI School of Music, September 25 & 26, 1992.

Double Bassist, UNI Orchestra, Rebecca Burkhardt, conductor, Carroll, Iowa (student recruitment concerts), April 27-28, 1992.

Double Bassist, J. S. Bach St. John Passion, Margaret Hillis and Bruce Chamberlain, conductors, Waterloo and Des Moines, April 12 and 17, 1992.

Piano and Double Bass Soloist, A Choreographers' Showcase, Trudy Martin and Cindy Carpenter, principal dancers, Jeffrey Funderburk, solo tubist, March 13 and 14, 1992.

Double Bassist, Wartburg Community Symphony, Janice Wade, conductor, Waverly, Iowa, February 16, 1992.

Double Bass Soloist, Northern String Chamber Music Festival, performing Frescobaldi/Cassado - Toccata, January 25, 1992, repeated at City High School, Iowa City, for Candace Wiebener's string students.

Double Bassist, Vivaldi Magnificat, First Presbyterian Church Choir, Bruce Chamberlain, conductor, December 15, 1991.

Fundamentum Bass Quartet (NYU quartet), International Society of Bassists Conference, New York University, New York, performing original and transcribed works for quartet: June 20, 1990 New York University Chamber Music Society, 1988-90.

New York Chamber Players, Cathedral Concert Series, St. John the Divine, Merkin Hall, New York: 1988-89.

Manhattan Choral Festival, The Riverside Orchestra, St. John the Divine, New York, May 2, 1988.

New York Chamber Players, Manhattan: 1987.

Nassau Symphony Orchestra (Long Island, New York): 1986-87.

Queensland Symphony Orchestra (Australian Broadcasting Commission), Brisbane, Australia: 1978-85.

Acting Principal and section player, Queensland Theatre Orchestra, Brisbane, Australia: 1978-85

Third Toowoomba Chamber Music Festival, Brisbane Festival Orchestra, Toowoomba, Queensland, Australia: March 8-17, 1985.

Bass quartet performance, University of Illinois at Urbana-Champaign: December 7, 1984.

String Summer School Double Bass Trio performance, University of Tasmania, Conservatorium of Music, Hobart, Australia: January 25, 1984.

Mostly Mozart Festival, Toowoomba, Queensland, Australia: April 1984 Second Taabinga Spring Music Festival, Taabinga Homestead, Kingaroy, Queensland, Australia: October 9, 1983.

Chamber music concert series, Australian String Teachers Association (Queensland Chapter), Taabinga Homestead, Kingaroy, Queensland, Australia: September 25-26, 1982.

Recital with Mayne String Trio and piano, University of Queensland, St. Lucia, Australia, performing Dvorak String Quintet in G, Op. 77, October 25, 1981.

Eleventh String Summer School, University of Tasmania, Conservatorium of Music, Hobart, Australia, performing Dittersdorf, Sinfonia Concertante in D for bass and viola (with orchestra); Dvorak, String Quintet in G, Op. 77: January 21-30, 1981.

Chamber recital with Mayne String Trio members and piano, University of Queensland, St. Lucia, Australia, performing Schubert, “Trout” Quintet, Op. 114: April 22, 1979.

Assistant Principal double bassist, Orquesta Sinfonica de Puerto Rico, Festival Casals, San Juan: 1977-78.

Conducting

Invited orchestra conductor, Instrumental Music Performance Program, Kelvin Grove State High School, Brisbane, Australia: July 13-20, 1987.

Music Director, Shir-li, women’s choir, Brisbane, Australia: 1983-85.

Senior Orchestra Conductor, Music for Young People School, Kelvin Grove College of Advanced Education, Brisbane, Australia: April 1983.

Music Director, Concert Society Orchestra, Brisbane, Australia: July-December 1981.

Recording

Conductor, Concert Society Orchestra and Bach Society Choir, St. John’s Cathedral, Brisbane, Australia - Handel, “Messiah”, for radio station 4MBS, Brisbane: November 25, 1981.

Solo Double Bass and/or Piano

Piano soloist, Gershwin, G./Castagnetta, G. Concerto in F, first movement (for solo piano), “The Struggle,” pianist for “Music Movement Voice” (various composers), percussionist for Allen, W. “Sound Over Place,” (four performances) with Trudy Martin and the Mosaic Dance Company, Effie Burt (vocalist), Wendell Allen (percussionist), Flora van Wormer (violoncellist), Patrick Murphy (bassist), Waterloo Arts and Recreation Center, Waterloo, Iowa, February 12, 14-15, 1997.

Piano soloist, Gershwin, G./Castagnetta, G., Concerto in F (for solo piano), “*Who Cares?*,” Gershwin/Rees duo piano arrangements (five performances), with Trudy Martin and the Mosaic Dance Company, Mankato State University, Mankato, Minnesota, March 26, 1996; Waterloo Arts and Recreation Center, Waterloo, Iowa, March 27-29, 30-31, 1996.

Double bass soloist, Marshalltown High School and UNI Chamber Orchestra, Marshalltown, Iowa, Dittersdorf, K. Concerto in E major (first movement): April 26, 1994.

Piano soloist, The Neuman Project Genesis: A Collaboration of the Arts (modern dance and ballet, original works in a multi-arts setting), featuring dancers from Ballet Iowa, Co-Motion Dance Theater, and Trudy Martin, in the modern dance work, “*Who Cares?*” Grand View College, Des Moines, June 27 and 28, 1992 (three performances).

Piano arrangements of Nat King Cole songs for “A Choreographers’ Showcase” dance concert of Trudy Martin, supported by the Iowa Arts Council and the National Endowment of the Arts, Waterloo Community Arts and Recreation Center, Waterloo: March 13-14, 1992.

Duo piano arrangements of Gershwin songs set to dance, Washington Square Repertory Company, New York University: April 19-20, 1991.

Recital, University of Queensland, St. Lucia, Australia, included Vivaldi/Rabbath, Concerto in F major; Bottesini, Elegia e tarantella; world premiere, Rees, “Blue” and “Spain”: October 10, 1985.

Recital, Musically Outstanding Student Camp, Queensland Department of Education, Griffith University, Brisbane, Australia included Rossini, Duet for Violoncello and Double Bass; Cassado/Frescobaldi, Toccata: June 23-30, 1985 Recital, University of Queensland, St. Lucia, Australia, Valentini, Trattenimento #3; Sydeman, For Double Bass Alone; Erb, Deja vu (Etudes #1 and #2); Bottesini, Bolero; world premiere, Rees, “Suite del’ annee”: May 22, 1984.

Recital, Jewish National Fund Gala Concert, Brisbane Cultural Centre, Australia, included Koussevitzky, Valse miniature; Laska, Perpetual Motion: August 6, 1983.

Recital, An Evening of Russian Music, Department of Russian, University of Queensland, St. Lucia, Australia, included Koussevitzky, Chanson triste, Op. 2, Valse miniature, Op. 1, No. 2: September 25, 1983.

Bass/piano recital, University of Queensland, St. Lucia, Australia, Schubert, Arpeggione” Sonata; Gershwin/Castagnetta, Concerto in F: October 26, 1982.

Recital, sponsored by the Queensland String Bass Society/University of Queensland, St. Lucia, Australia, included Eccles, Sonata in G minor; Schubert, “Arpeggione” Sonata; world premiere, Iwatake, “Triplet”: October 23, 1981.

Recital, Darling Downs Institute of Advanced Education, Toowoomba, Australia, included J. S. Bach, Preludium, Suite No. 5; Australian premiere, Hauta Ahf, Kadenza for solo double bass; Hoffmeister, Concertino in D, No. 2; Bruch, “Kol Nidrei”: March 12, 1981.

Concert, Australian String Teachers Second National Conference, University of Queensland, St. Lucia, Australia, included Bottesini, Duo for Two Double Bases, No. 1: April 17, 1981.

Concert, University of Queensland, St. Lucia, Australia, included W. A. Mozart, “Per questa bella mano,” K. 612, for bass voice and double bass obligato (with orchestra): October 18, 1980.

Recital, Haydn Society of Queensland, Brisbane, Australia, included Dittersdorf, Concerto in E major; Marcello, Sonata in C major: July 23, 1980.

Recital, University of Queensland, St. Lucia (repeated at Kelvin Grove College of Advanced Education), Australia, included Dittersdorf, Concerto in E-flat major; Berkeley, Introduction and Allegro for double bass and piano; Cassado/Frescobaldi, Toccata: March 6, 1979.

Recruitment/Special Initiatives:

Received accreditation from the National Association of Schools of Music, July 2011.

Established a Special Interest Group for music technology with the International Society for Music Education, Spring 2011.

Established Mu Tau Psi, a professional student organization representing music technology, Spring 2011.

Established and met with the Department of Music and Arts Technology Music Industry Advisory Board, June 23, 2009.

Developed and had approved the Bachelor of Science in Music Technology Degree for IUPUI, September 2008.

Symposium Director and Convenor: Symposium 2006: First Stop Indiana. A meeting of invited music professors and administrators statewide to IUPUI for a meeting on using the Internet and Internet2 for music performance, research, and teaching. Sponsored by the Lilly Foundation and Indiana University under the New Frontiers Grant program, March 3-4, 2006.

Multipoint Internet2 videoconference between Bergen, Norway, Perth, Australia, Kuopio and Kuomo, Finland, University of Northern Iowa, Cedar Falls, Wichita State University, Kansas, and IUPUI, XXVI World Conference ISME 2004, Bergen, Norway.

Desktop videoconferencing for teaching classes between Perth, Australia, and IUPUI, February 21-March 6, 2002.

Multipoint Internet2 videoconference between Perth, Australia, Kuopio and Kuomo, Finland and IUPUI, with Dr. Tim Brimmer and the Music Leadership Institute, 12th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 20, 2001.

Second interactive televised performance between IUPUI and New York University, 11th International Conference/Institute on Music Technology, Indiana University School of Music at IUPUI, Indianapolis, Indiana, June 18, 2001.

First interactive televised performance between IUPUI and New York University, November 2, 2000 using Internet II.

Facilitated approval of the Master of Music in Music Technology program to be the first entirely online graduate music program in the United States for IUPUI, June 2000.

Created an Institute on curricular reform in music education with Dr. Maud Hickey, co-sponsored by the College Music Society, Music Educators National Conference, and the Society for Music Teacher Education for June of 2001 at Northwestern University

Attracted 61 graduate music education majors to the UNI MM program since Fall 1993 through the Iowa Communications [television] Network.

Proposal submitted to UNI President Koob and UNI faculty for a national conference in interactive televised instruction, 1995-1996.

Initiating student teaching experiences for music education students in Australia and supporting other placements in Japan, Europe, and Egypt, 1994-1996.

Coordinator of The University of Northern Iowa recruiting activities at the Iowa Choral Directors Association Conference, Northern Iowa Area Community College, Mason City, 1993-1995.

Coordinator of The University of Northern Iowa recruiting activities at the Iowa Music Educators Association Conference, Ames, 1991-94.

Coordinator of The University of Northern Iowa recruiting activities at the International Mid-West Band and Orchestra Clinic, Chicago, Illinois, 1992-1993.

Proposed development of a Doctor of Music Education program for the UNI School of Music, 1992.

Coordinator of the NYU recruiting activities at the New York State School Music Association Conference, Concord Hotel, Kiamesha Lake, New York 1986-1990.

University Committee Service:

2013-2014, Chair, IUPUI Faculty Council Distance Education Committee

2013-present: IUPUI Faculty Council Technology Committee

2011-2013: Purdue School of Engineering and Technology Promotion and Tenure Committee

2010-present: Purdue School of Engineering and Technology Graduate Education Committee

2011-present: IUPUI Faculty Council Campus Planning Committee

2009-present: Purdue School of Engineering and Computing Technology Chairs, Directors, and Deans Committee

2009-2014: Chair, IUPUI Department of Music and Arts Technology Faculty Executive Committee
 2009-2014t: Chair, IUPUI Department of Music and Arts Technology Faculty
 2009-2014: Chair, IUPUI Department of Music and Arts Technology Faculty Council
 2008-2009: IUPUI Department of Music and Arts Technology Instructional Policies
 2005-present: IUPUI Moi University International Program Committee
 2004-present: IUPUI Council on Retention and Graduation
 2005-present: IUPUI Academic Policies and Procedures Committee
 2004 present: IUPUI Enrollment Management Council
 2004-2008: School of Music Instructional Policies Committee
 2001-2003: IUPUI International Affairs Program Committee
 2001-2009: IUPUI Budget Affairs and Planning Committee
 1999-2008: IUPUI Faculty Council Representative (Music)
 1999-2008: School of Music Executive Committee
 1999-2008: School of Music Faculty Council
 1999-2008: School of Music Faculty

Dr. Benjamin Day Smith

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Education

- Doctor of Musical Arts, Music Composition** 2011
University of Illinois at Urbana-Champaign (UIUC)
Cognate in Computer Science
- M.A. Music Composition** 2007
University of Illinois at Urbana-Champaign
- Independent Graduate Study in Traditional Irish Music** 2003
Irish World Music Centre, University of Limerick, Ireland
- B.A. Music Composition** 2002
Ithaca College School of Music, Ithaca, NY

Teaching Experience

- Assistant Professor**, Music and Arts Technology, Computer Information and Graphics Technology, Indiana University Purdue University Indianapolis 2013-present
Teaching Music Technology and Graphics Technology core courses.
- Adjunct Assistant Professor**, EE/CS, Case Western Reserve University 2012-2013
Teaching introductory video game development, design, and history. Engaging with student's senior game development capstone projects.
- Artist in Residence**, Cleveland Institute of Art 2012-2013
Teaching classes in sound design, video game design, and 3D animation. Guest lecturing and critiquing for advanced game production, serious and educational games, animation, and video production.
- Lecturer**, Illinois Informatics Institute, UIUC 2011-2012
Teaching intermediate to advanced game development course, focusing on team-based creation of student designed virtual worlds. Covering topics in play theory, game architecture, interfaces and usability, graphics and animation, networking, and games for education.
- Teaching Assistant**, School of Computer Science/Illinois Informatics Institute, UIUC 2008-2009
Created and taught undergraduate course in game design and implementation, *Designing Virtual Worlds*.
Delivered lectures, lead discussion sections, provided technical support, and assessment for classes of 30-40.
- Music Instructor**, *Bow-dacious "World on a String"* Music Camp, Urbana, IL 2008-2011
Teaching music composition, classical violin, and fiddle styles in group and individual settings to all ages and levels in week-long intensive camps.
- Co-Director of UIUC Digital Collective** (Laptop Ensemble), School of Music 2007-2009
Founded and co-directed multimedia lab class and performance ensemble, comprised of 6-8 musicians, dancers and engineers. Produced original, interactive, multi-media computer works, and performances.
- Music Instructor**, Ithaca Music Academy and Privately 1998-2010
Taught violin, mandolin, and American and Celtic fiddle styles, maintained a music studio.
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Professional Experience

Lead Technical Engineer, Case Western Reserve University, I.T. Services 2012-present
Funded by an NSF EAGER grant, directing design and development of HD video-conferencing software to leverage capabilities of ultra-high broadband next-generation networks. Managing undergraduate employees in application development and programming. Liaison with CIA communication design faculty and students.

PostDoc, National Center for Supercomputing Applications, 2011-2012
Institute for Advanced Computing Applications and Technology, UIUC
Researching dynamic machine learning algorithms, reinforcement learning and parallel implementations for real-time gesture recognition to support live dance and music performance. Working with high performance computing to enable advanced artistic research and performance. Publishing and writing grant proposals to regional and national funding agencies.

Research Assistant for Technology, Illinois Japan Performing Arts Network 2010-2011
Directed the simulcast of live theater and musical performances between sites in the US and Japan. Oversaw technical installation, configuration, and operation of multi-venue, telematic network systems, maintained hardware.

Software Developer, School of Music, UIUC 2010-2012
Created original video games for music education applications to facilitate the discovery of new modalities of practical musical education in the classroom and studio. Designed acoustic-based interaction models and interfaces and developed prototypes for case studies and user testing.

Software Designer and Developer, Illinois Governmental Policy Agency, Urbana 2009-2010
Developed an educational video game, *Disaster Ville*, for the Illinois Emergency Management Agency. Worked with a team of faculty and graduate students at the University of Illinois, Chicago and UIUC, on this game aimed at educating elementary and middle school students about disaster response measures and mitigation actions.

Sound Engineer, Freelance, NY and IL 2000-present
Mixing live shows and recordings for popular and classical ensembles and musicians.

Research Assistant, School of Computer Science, UIUC 2007-2009
Developed a software framework for scalable, distributed, open-source virtual world support, titled *mWorlds*.

Research Assistant, Department of Dance, UIUC 2006-2007
Created Leonardo's Chimes, a three movement interactive dance and multi-media work, with faculty at UIUC and Washington University, St. Louis. Presented at festivals around the US.

Software Engineer, Vector Magnetics, Ithaca, NY 2003-2005
Designed and built user interfaces, databases, and network architectures in Windows .NET environment.

Lab Technician, ElectroAcoustic Studios, Ithaca College, Ithaca, NY 1999-2002
Maintained and repaired studio equipment, software, and assisted the installation and setup of new studios.

Selected Technical Proficiencies

Applications and IDEs: MaxMSP, Unity, Ableton Live, ProTools, Cubase, Reason, Maya, PureData, UDK, Adobe Creative Suite, Sibelius, Finale, 3D Studio Max, Xcode, Visual Studio, Matlab.

Fluent in c, c++, Java, Javascript, c#, LISP, UDK Script, Php developing on Mac OS and Windows.
Experienced in HTML 5, XNA, Python, Objective-C, Perl, Visual Basic, assembly, Flash/Action Script, SL script, OpenMP/MPI.

Publications

- Smith, Benjamin D. “**Tracking Creative Musical Structure: the Hunt for the Intrinsically Motivated Generative Agent.**” *Workshop on Musical Metacreation (MUME)* at the *Ninth AAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE'13)*. Stanford, CA: AAAI 2013.
- Smith, Benjamin D. and Guy E. Garnett. “**Improvising Musical Structure with Hierarchical Neural Nets.**” *Workshop on Musical Metacreation (MUME)* at the *Eighth AAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE'12)*. Stanford, CA: AAAI, 2012.
- Smith, Benjamin D. “**Enabling Live Presence: Dynamic Video Compression for the Telematic Arts.**” *International Computer Music Conference (ICMC) 2012*. Slovenia: ICMA, 2012.
- Smith, Benjamin D. and Guy E. Garnett. “**Advancing Expert Computer-Human Interaction with Music.**” *ICMC 2012*. Slovenia: ICMA, 2012.
- Smith, Benjamin D., Matthew Thibeault, and Nicholas Jaworski. “**Developing games that can create real heroes on real guitars: using acoustic musical instruments and the human voice as controllers.**” *Games, Learning and Society 8.0*. Madison, WI: June, 2012.
- Smith, Benjamin D. and Guy E. Garnett. “**Unsupervised Play: Machine Learning Toolkit for Max.**” *New Interfaces for Musical Expression (NIME) 2012*. Ann Arbor, MI: ICMA, 2012.
- _____. “**Reinforcement Learning and the Creative, Automated Music Composition.**” *evoMUSART 2012*. Malaga, Spain: Springer, 2012.
- _____. “**The Education of the AI Composer: Automating Musical Creativity.**” Paper presented to the *Music, Mind and Invention Workshop*, The College of New Jersey, Ewing, NJ, March 29-31, 2012.
- _____. “**Machine Listening: Acoustic Interface with ART.**” *2012 ACM International Conference on Intelligent User Interfaces*. Lisbon, Portugal: ACM, 2012.
- _____. “**Machine Listening: ART and the Intelligent Acoustic Interface.**” Paper presented to the *2nd University of Illinois Postdoctoral Research Symposium*, Urbana, Illinois, January, 2012.
- _____. “**Interactive High-Performance Computing for Music.**” *ICMC 2011*. Huddersfield, UK: ICMA, 2011.
- Smith, Benjamin D. **Telematic Composition**, D.M.A. Dissertation, UIUC, 2011.
- Smith, Benjamin D. and Guy E. Garnett. “**The Self-Supervising Machine.**” *NIME 2011*. Oslo, Norway: May, 2011.
- Smith, Benjamin D. **Icosaverse**, *Humanities, Arts, Science, and Technology Advanced Collaboratory (HASTAC)*, May 16, 2010.
- _____. **Synchronic Shades**, *North American Saxophone Alliance biennial conference 2010*, Athens, GA.
- Pietrowicz, Mary, Robert McGrath, Benjamin Smith, and Guy Garnett. “**Transforming Human Interaction with Virtual Worlds.**” Paper presented to the *Workshop on Computational Creativity Support at ACM SIG-CHI 2009*. Boston, MA: ACM, 2009.
- Smith, Benjamin D. **MusiVerse**, *ICMC 2007*, Copenhagen, Denmark.
- _____. *North American Saxophone Alliance biennial conference 2008*, Columbia, SC, March.
- _____. **CANVAS** (Collaborative Advanced Navigation Virtual Art Studio), Champaign, IL, 2008.
- Toenjes, John, David Marchant, and Benjamin Smith. **Leonardo's Chimes: Invention Suite**, three act multi-media dance suite for dancer and musicians. *SPARK Festival 2008*, Minneapolis, MN, and *Ingenuity Festival 2008*, Cleveland, OH.
- Smith, Benjamin D. **For 11**, *Midwest Composer's Symposium 2007*, Bloomington, IN.
- _____. “**Beethoven's Romance With Infinite Caprice: The 'Righini Variations', WoO 65.**” *Arietta*, the journal of the Beethoven Piano Society of Europe, 2007.

Commissions

- Shift*** – score for soprano, baritone violin, and computer for ~25' original modern dance work.
 Krannert Center for the Performing Arts, UIUC March 11-14, 2009
- What Remains*** – score for solo violin and electronics to accompany ~20' original modern dance work.
 Krannert Center for the Performing Arts, UIUC March 5-8, 2008
 iSpace, Chicago, IL, January 25, 2008
- Am... again*** – electro-acoustic sound track to accompany ~20' original modern dance work.
 Krannert Center for the Performing Arts, UIUC March, 2007

Academic Awards

- | | |
|--|-----------|
| Illinois Distinguished Fellowship, | 2005-2008 |
| Ithaca College Dean's List, 8 semesters, | 1998-2002 |
| Clinton B. Ford Scholarship for talented string players, | 1999-2001 |
| Houghton Scholarship for talented violinists, | 2001 |
| Ithaca College Dean's Scholarship, | 1998-2002 |
| Phi Kappa Phi, Junior Inductee, | 2001 |
| Pi Kappa Lambda, Junior Inductee, | 2001 |
| Oracle Honor Society, | 1999 |

Selected Performance Experience

- | | |
|--|--------------|
| The Mean Lids , Band Leader, Arranger, Fiddler, Banjo player, Vocalist, | 2008-Present |
| Champaign-Urbana Chorale Festival Orchestra , IL, Violinist, | 2010 |
| Prairie Ensemble , Champaign, IL, Violinist, | 2008-2010 |
| The Music of Django Reinhardt , Urbana, NY, Arranger, Violinist, | 2009-2010 |
| Tree Thump , Fiddler, | 2007-Present |
| Big Grove Zydeco , Fiddler, | 2006-2010 |
| Champaign-Urbana Symphony Orchestra , IL, Violinist, | 2006-2007 |
| Tabula Rasa , Founder, Co-Director, Violinist, | 2003-2005 |
| Cletus and the Barnburners , Fiddler and Arranger, | 2000-2005 |
| Orchestra of the Southern Finger Lakes , Elmira, NY, Violinist, | 2002-2005 |
| Route 5 , Central NY, Fiddler, Vocalist, | 2004-2005 |
| Waterbear , Central NY, Violinist, | 2004-2005 |
| Red Hot and The Rhythm Club , Ithaca, NY, Band Leader, Violinist, | 2003-2005 |
| Elmira College Theatre Pit , NY, Solo Violinist, | 2004 |
| The Bobby Vinton Show , NY, Violinist, | 2004 |
| Ithaca College Musical Theatre Pit Orchestra , NY, Solo Violinist, | 2004 |
| Sunny Weather , NY, Fiddler, | 2003 |
| Mansfield University Festival Orchestra , PA, Violinist, | 2001 |
| Cortland Baroque Ensemble , NY, Violinist, | 2001-2002 |
| Corning-Elmira Symphony Orchestra , NY, Violinist, | 2000-2002 |
| Ithaca College Chamber Orchestra , NY, Violinist, Principle 2nd, | 2000-2002 |
| Ithaca College Symphony Orchestra , NY, Violinist, Principle 2nd, | 1998-2002 |

Recordings

Another Time Around The Sun , Mean Lids, Fiddle, Banjo, Self-published, IL,	2013
Kalyx , Mean Lids, Producer, Fiddle, Banjo, Self-published, IL,	2011
Mean Lids , Mean Lids, Producer, Fiddle, Guitar, Self-published, IL,	2010
Tree Thump , Tree Thump, Fiddle, Vermin Sundial Records, IL,	2008
Bridges of Song , Amasong, Guest Baritone Violin, IL,	2008
Letters To The Prison City , Bert Scholl and Route 5, Fiddle, Backing vocals, I-Town Records, NY,	2008
Unreleased , Producer, Violin, Self-published, IL,	2006
Benjamin Smith , Producer, Violin, Self-published, NY,	2004
Won't Be Long , Urban Horse Theives, Guest Fiddle, I-Town Records, NY,	2004
Crow Greenspun , Guest Fiddle, I-Town Records, NY,	2004
Proscenium , Bora Yoon, Guest Fiddle, Self-published, NY,	2003
Going To The Barn , Cletus and the Barnburners, Fiddle, Vocals, I-Town Records, NY,	2001
Cletus and the Barnburners , Cletus and the Barnburners, Fiddle, Vocals, Grasshole Records, NY,	2000

Appendix F

Solicited Letters of Support



INDIANA UNIVERSITY

OFFICE OF THE EXECUTIVE VICE PRESIDENT
FOR UNIVERSITY ACADEMIC AFFAIRS

April 9, 2014

Debra Burns, PhD, MT-BC
Associate Professor
Associate Dean for Research (Interim)
Purdue School of Engineering and Technology @ IUPUI
Department of Music and Arts Technology

Dear Dr. Burns:

Attached is a pdf worksheet showing the incremental costs and resources of the proposed Ph.D. in Music Technology degree program. The calculations are meant to provide a representation of direct incremental expense based on the numbers of credit hours generated by student enrollment. I received no input from the program sponsors about other costs that might be occasioned by the program with which to augment or alter these calculations.

Please let me know if additional information is needed.

Sincerely,

A handwritten signature in dark ink, appearing to read "Stephen L. Keucher", written over a horizontal line.

Stephen L. Keucher

Enclosure: C1748_PhDMusicTechnology.pdf

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY
INTERNAL BUDGET TABLE (not to be included in proposal)

Institution/Location: Indiana University-Purdue University Indianapolis
Program: Ph.D. in Music Technology
Proposed CIP Code: 50.0913
Base Budget Year: 2013-14

	FTE	Year 1 2014-15	FTE	Year 2 2015-16	FTE	Year 3 2016-17	FTE	Year 4 2017-18	FTE	Year 5 2018-19
EXISTING RESOURCES										
Existing Faculty	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -
Other Existing Resources		-		-		-		-		-
Total Reallocation		\$ -		\$ -		\$ -		\$ -		\$ -
NEW COSTS										
Personnel Services										
Faculty	-	\$ -	0.5	\$ 50,000	1.0	\$ 100,000	1.0	\$ 100,000	1.0	\$ 100,000
Adjunct Faculty	-	-	-	-	-	-	-	-	-	-
Staff	-	-	-	-	-	-	-	-	-	-
Graduate Assistants	-	-	-	-	-	-	-	-	-	-
Total Personnel Services		\$ -		\$ 50,000		\$ 100,000		\$ 100,000		\$ 100,000
Supplies and Expense										
General Supplies and Expense		\$ 5,000		\$ 10,000		\$ 12,500		\$ 15,000		\$ 20,000
Recruiting		-		-		-		-		-
Travel		-		-		-		-		-
Library		-		-		-		-		-
Total Supplies and Expense		\$ 5,000		\$ 10,000		\$ 12,500		\$ 15,000		\$ 20,000
Equipment										
New Equipment (see narrative)				\$ -		\$ -				
Equipment Replacement		-		-		-		-		-
Total Equipment		\$ -		\$ -		\$ -		\$ -		\$ -
Facilities (see narrative)		\$ -		\$ -		\$ -		\$ -		\$ -
Student Assistance										
Graduate Fee Scholarships		\$ -		\$ -		\$ -		\$ -		\$ -
Fellowships		-		-		-		-		-
Total Student Assistance		\$ -		\$ -		\$ -		\$ -		\$ -
Total New Costs		\$ 5,000		\$ 60,000		\$ 112,500		\$ 115,000		\$ 120,000
TOTAL w/REALLOCATION		\$ 5,000		\$ 60,000		\$ 112,500		\$ 115,000		\$ 120,000
SOURCES OF FUNDING										
New Revenues										
New Student Fee Income		\$ 34,500		\$ 51,800		\$ 56,600		\$ 79,600		\$ 60,500
Other (please specify)		-		-		-		-		-
Total New Revenue		\$ 34,500		\$ 51,800		\$ 56,600		\$ 79,600		\$ 60,500
TOTAL SOURCES w/REALLOCATION		\$ 34,500		\$ 51,800		\$ 56,600		\$ 79,600		\$ 60,500
Unexplained surplus/(deficit)		\$ 29,500		\$ (8,200)		\$ (55,900)		\$ (35,400)		\$ (59,500)



SCHOOL OF ENGINEERING AND TECHNOLOGY

INDIANA UNIVERSITY–PURDUE UNIVERSITY
Indianapolis

July 24, 2014

Nasser Paydar, Ph.D.
Executive Vice Chancellor and Chief Academic Officer
Indiana University-Purdue University Indianapolis
Indianapolis, Indiana 46202

Dear Dr. Paydar,

I enthusiastically support the proposal to establish a Ph.D. in music technology submitted by the Department of Music and Arts Technology (MAT) within the School of Engineering and Technology (E&T) at IUPUI.

Per the Integrated Postsecondary Education System (IPEDS) data feedback report for 2013, the IUPUI campus awarded 35 Doctor's Research/Scholarship degrees in the 2011-2012 academic year as compared to the average of 236 degrees per institution from the custom comparison group (i.e., 12 IUPUI peers). When evaluated with respect to this peer group, IUPUI compares very favorably with respect to Master's and Bachelor's degree production at 95% and 90%, respectively, of the averages in these categories. However, IUPUI only produces 15% of the average for the Ph.D. annual degree production by institution among our peers.

The IUPUI Strategic Plan clearly recognizes the significant gap in Ph.D. degree production as increasing capacity for graduate education, with emphasis on creating more Ph.D. programs, is a featured priority in the new plan. Likewise, the School of Engineering and Technology's strategic plan closely aligns with campus priorities in that the growth of the graduate programs within our School has been a high priority to help sustain the substantial increase in research, creative activities, and other forms of scholarship that have occurred within our School over the last few years.

A defining feature of the proposal to establish a Ph.D. in music technology is that it offers a unique niche in that there are only two Ph.D. programs in music technology in the United States (i.e., New York University and Georgia Institute of Technology). Moreover, the proposed program leverages the existing strengths of complementary programs within the School of Engineering and Technology, distinguishing it further from the programs at NYU and Georgia Tech. The proposed program is uniquely positioned to contribute to the advancement of music technology as an academic discipline and establish itself as a national and international leader in this field.

It is expected that the Ph.D. program in music technology will produce academic and professional leaders capable of addressing a rapidly changing environment driven by continual development and integration of technology. Moreover, by leveraging the research strengths that exist in the MAT department in music technology, including faculty who have a secondary appointment within other technology departments in E&T, a very clear distinction is made between the expertise and direction of our department as compared to the world-renown Jacobs School of Music at IUB. The proposed Ph.D. program would further solidify that distinction and provide MAT a unifying focus for achieving national and international prominence as a department at IUPUI.

The School of Engineering and Technology is committed to the success of the proposed Ph.D. program. As startup support, the School will provide full funding for four years (including all instructional fees, health insurance, and stipend) for the inaugural Ph.D. student. The MAT department clearly understands and is committed to growing its revenue streams, including, but not limited to, credit hour production to grow the base funding available to support Ph.D. students. In addition, MAT understands there is an opportunity to reallocate some existing base funds within the department to support Ph.D. students. In general, MAT will have the same access to E&T funding for graduate student support as all other departments within our School. The proposal identifies the funding available to support the proposed degree from existing, startup, and reallocated sources.

In summary, the proposed Ph.D. in music technology offers the opportunity to directly contribute to School and campus priorities defined in the respective strategic plans while providing the focus and direction to elevate the MAT department to national and international prominence.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. J. Russomanno', with a stylized flourish at the end.

David J. Russomanno, Ph.D.

Dean, Purdue School of Engineering and Technology, IUPUI

Professor, Department of Electrical and Computer Engineering, IUPUI



April 9, 2014

Dear Fred,

I've been asked to supply my comments on the topic of the proposed Ph.D. program in Music Technology at IUPUI. As a longtime member of the Advisory Board, I am happy to oblige.

I support the idea for several reasons, but the main reason is that the music and audio technology field is growing concurrently in many new and exciting directions, and there are myriad opportunities for innovative work in this field. Communication in all its forms is absolutely front and center in today's society. The Music Technology program is well poised to help craft tomorrow's movers and shakers in this quickly evolving, far reaching field.

Indiana has a long tradition of music and audio products being manufactured, marketed and shipped to the world. With new innovations in advanced audio/acoustics technology emerging constantly, it would be beneficial to have researchers of the most advanced level working in our state. Auralex, Klipsch and other technology-based Indiana companies can only benefit, as can the program participants, who can avail themselves of the intern and employment opportunities companies like ours provide. (As you're aware, Auralex has had numerous interns from your program, and has hired a number of them.)

As you know from my contributions over the years to the Advisory Board, plus my many lectures and material contributions, I strongly support the program. My primary focus, as expressed during numerous Board meetings, is on developing leadership and entrepreneurial skills among those going through the IUPUI program. Too often, I've seen candidates with a good CV, but nothing real-world to go with it. As such, it is my urging that the Ph.D. program cultivate candidates who already exhibit proven leadership capacity, then do all it can to expand their skills in this area. It has been my experience that techies are common, but entrepreneurial leaders who can drive technology-related markets in exciting new directions are not.

As I have also expressed at Board meetings, I'm also in favor of maximizing the program's involvement with the local community as a whole. This exposes more laypeople to the merits of high technology, sure, but it also exposes the program participants to fresh outside thinking that can help spur thought and drive innovation.

Lastly, I would encourage discussion about how the Music Technology program can mesh with IU's esteemed medical school and hospitals in an effort to drive innovation in using (or improving) sound to help patients heal.

I appreciate the opportunity to serve the students and the university by participating as a member of the Advisory Board, and appreciate the opportunity to offer my hopefully helpful input as the program matures.

Sincerely,

A handwritten signature in black ink that reads "Eric T. Smith". The signature is written in a cursive, flowing style.

Eric T. Smith
Founder & President
Auralex Acoustics, Inc.

April 9, 2014

Dr. Scott Deal
Professor of Music and Arts Technology
Indiana University Purdue University Indianapolis
535 W. Michigan St., Indianapolis, IN 46202

Dr. Deal,

It is exciting to hear of the proposed Ph.D. program in Music and Arts Technology. I am teaching Digital Audio Recording (Pro Tools), Midi/Synthesis (Logic) and Musicianship 1 & 2. Currently I am teaching at Bergen Community College (10th year) and Ramapo College of NJ (3rd year). This past fall semester I taught Music Production (Logic) to broadcast students at Montclair State University in Montclair NJ. All of these schools are right outside NYC where I live. I am actively performing, on electric & acoustic bass, Jazz, Rock & R & B/blues, recording and I have been playing in "Rocky" on Broadway. I am really fortunate to have lots of great opportunities. It is a challenge to keep 2 careers going, playing & teaching but I do feel like I am growing all the time. I am looking forward to focusing more on writing and recording this summer.

There are 2 reasons to pursue a Ph.D.: higher education and research. I am very interested in applying for the proposed IUPUI program. I want to learn all about it and I have looked into the NYU program a bit. I do not know where I see myself in the future—higher ed., research, or somewhere else, but I have a feeling the program would be great for me. I have applied for numerous full time teaching positions and felt well qualified but so far have not gotten any. The terminal degree might be precluding me. I am never sure how much that weighs in.

Please keep me posted on the Ph.D. program.

Sincerely,
Susan Williams

6/28/2014

Dr. Scott Deal
Professor of Music and Arts Technology
Indiana University Purdue University Indianapolis
535 W. Michigan St., Indianapolis, IN 46202

Dr. Deal,

After graduating from IUPUI with an M.S. in Music Technology in 2012, I taught at St. Gregory Barbarigo School in Garnerville, NY. I taught general music to grades K-8 and directed the spring musical. In the fall of 2013, I started a position covering a sabbatical as a visiting instructor and technology coordinator at the Crane School of Music at the State University of New York at Potsdam. In this position, I teach a music technology survey course and a music education practicum. In addition, I supervise the technology use in the Crane School of Music and oversee and produce the live video streaming of concerts. I will remain in this position until the end of the 2013-2014 academic year and am currently searching for a new position for the next academic year.

I plan on returning to school to obtain a Ph.D. in Music Technology in the near future. I hope to have a career teaching music technology at the university level. In order to do so, I feel that I need more training and research to bring to my students. During the year that I taught K-8 music, I realized how much I missed being in an academic environment. This has been relieved by my temporary position at Crane, but I do not have the time to learn or research as much as I want. Being in a strong Ph.D. program will afford me that opportunity.

Sincerely,

Josh Emanuel

C. Graham Spice
Washington & Lee University
Department of Music
204 W. Washington St.
Lexington, VA 24450

June 26, 2014

Dr. Scott Deal
Professor of Music and Arts Technology
Indiana University - Purdue University Indianapolis
535 W. Michigan St.
Indianapolis, IN 46202

Dr. Deal,

Since 2006 I have been building a Music Technology program within the Music Department of Washington and Lee. The impact of this program, even at a small university like Washington and Lee, has been significant for the Music Department. We have seen steadily increasing numbers of majors and non-majors enrolled and involved in Music courses, ensembles, and student organizations.

In particular, I feel that my experience at IUPUI with distance learning has contributed to my marketability to my current employer and when applying for jobs in higher education. After completing my degree online in 2011, I feel uniquely qualified to assist with the development of on-line certificate programs and course modules that utilizes distance learning. I was exposed to the curricular methodology of Dr. G. David Peters and Dr. Fred J. Rees, both recognized leaders in computer-based education and distance learning. Many of the courses in the MSMT program included academic study of the history and current state of online coursework in music technology. A focus on curricular development of music technology courses via distance learning along with my personal experience attending classes online at IUPUI contribute significantly to my qualifications for positions in higher education.

I am interested in the possibility of a Ph.D. in Music Technology because it would help level the playing field with my colleagues. All of the full-time faculty in the Music Department where I work have Ph.D.s and most of the jobs available require that level of education. I would expect that having a Ph.D. would give me a competitive edge when applying for other positions, especially at larger schools.

Another benefit of gaining a Ph.D. in Music Technology would be the opportunity for extensive guided research in a specific area. I hope that IUPUI is able to create a Ph.D. program for students pursuing an academic career like myself.

Sincerely,

A handwritten signature in cursive script that reads "C. Graham Spica". The signature is written in dark ink and is positioned below the "Sincerely," text.

MUS-N5XX Electro-acoustic Music Since 1945
New Course Syllabus and Schedule

Professor Scott Deal
deal@iupui.edu

Required Materials

The New Media Reader

edited by Noah Wardrip-Fruin and Nick Montfort

isbn: 0262232278

Listening through the Noise: The Aesthetics of Experimental Electronic Music

Joanna Demers

isbn-10: 019538766X

isbn-13: 978-0195387667

Prerequisites

Graduate or upper division standing at IUPUI.

COURSE OBJECTIVE:

This course explores historical paradigms that helped shape the progression of technology in music and related fields since 1945. Treatment is given to a variety of movements, music-forms, communities and entities who contributed to their age through technological, conceptual, and artistic innovation. Class discussions and blogs will promote phenomenological understanding of the studied content, particularly as it relates to current trends. Through the study of the past, the class will develop rationales for new and emerging technologies that relate to the expression of music.

OUTCOMES AND OBJECTIVES:

1. Describe the nature, purposes, and types of historical music advances leading into current technologies.
2. Access and use databases and other sources of research using library and online resources.
3. Apply APA style guidelines in citations of written work.
4. Develop understanding of research for technology-based arts.
5. Become well versed in the array of stylistic musical innovations through the period of study.

COURSE REQUIREMENTS AND EVALUATION:

Written assignments = 30%

Class participation = 30%

Midterm Examination=20%

Final Examination: = 20%

ATTENDANCE

Regular attendance for both in-class and online students is strongly encouraged. Class participation does amount to 30% of the final grade.

ANY ASPECT OF THIS SYLLABUS, INCLUDING THE SCHEDULE MAY BE SUBJECT TO CHANGE.

READINGS

Readings, listenings, and/or web-based video viewings will be assigned for discussion in class. Students are expected to intake the assigned materials and be prepared to discuss them in the following class.

N521 COURSE SCHEDULE

- 1: Course Overview
- 2: Post War Developments and Trends
3. Musique Concrète and the Rise of Studios
4. The Tube, the Transistor, and Robert Moog
5. The Computer as a Musical Instrument
6. The Digitization of Music
7. The Studio of the Beatles
8. The Advent of MIDI
9. Electronic Dance Music I
10. Electronic Dance Music II
11. Music and Media I
12. Music and Machine Learning
13. Telematic Art and Networked Music
- 14: Presentations in Class

REVIEW OF READING: Write a 1000 word descriptive overview about your assigned reading. Discuss what it is, what it accomplishes, why it is interesting, how does it fit in its field of study, and how it is relevant to today's world.
300 points

ASSIGNMENT THREE: BIBLIOGRAPHY: Locate and compile a bibliography of 20 references related to your potential project topic. Use APA style.
300 points

SUBMITTING ASSIGNMENTS:

When submitting assignments online, (text, powerpoint, etc.) Always place your last name at the beginning of the file name, followed by the assignment name and date. Examples, (imaginary student, let's call him John Lennon)

Powerpoint: lennon-project-april10.ppt.

Text: lennonreport-Feb6.txt.

You will at times be asked to show your work in a presentation format. This could be a movie in powerpoint or keynote, regular powerpoint, or some kind of video software. Convert the powerpoints to movies, and make them exactly the length indicated in the assignment. Post the movies to Youtube or similar site of your choice. An excellent source of making the movie is *Screenflow*.

Submitting Presentation Assignments:

1. Create your music assignment in format of your choice.
2. Then make a screen movie of it playing, capturing the audio as well.
3. Post to a web-based presentation format such as Youtube, Vimeo, or BlipTV.
5. Submit to your Drop Box folder the Youtube or other web link, so the class and myself can quickly access the movie for viewing and listening.

IMPORTANT PRACTICAL MATTERS

My email address for you to use is deal@iupui.edu, OR through the Oncourse email for this course.

Unless notified otherwise, submit ALL assignments in the drop box section of Oncourse.

MUS-N5XX Music Engineering Technology: New Course Syllabus and Schedule

Instructor: Assistant Professor Benjamin Smith bds6@iupui.edu

Required Materials

Computer Music Tutorial

Curtis Roads, isbn: 0262680823

Prerequisites: Graduate or upper division standing at IUPUI.

COURSE OBJECTIVE: This course provides an overview and in-depth treatment of core engineering concepts that are foundational to music technology. Topics include acoustics and psycho-acoustics as related to music, digital audio, digital signal processing for music, and systems design for music technology. Students will develop an understanding of elements that appear across the breadth of the current field and look towards emerging developments and open problems in music technology.

OUTCOMES AND OBJECTIVES:

1. Instill an in-depth knowledge of acoustics and psychoacoustics.
2. Understand digital audio and its relationship to acoustic sound.
3. Develop a core understanding of digital signal processing techniques used in audio and music.
4. Apply common system design models to better understand music technology artifacts (applications, devices, etc.)

COURSE REQUIREMENTS AND EVALUATION:

Exams = 70%

Final Examination = 30%

ATTENDANCE Regular attendance is strongly encouraged.

ANY ASPECT OF THIS SYLLABUS, INCLUDING THE SCHEDULE MAY BE SUBJECT TO CHANGE.

READINGS Readings, listenings, and/or web-based video viewings will be assigned for discussion in class. Students are expected to intake the assigned materials and be prepared to discuss them in the following class.

N521 COURSE SCHEDULE

Sequence of Topics covered:

1. Course Overview and Introduction
2. Acoustics, Physics of Sound
3. Psycho-acoustics
4. Digital Audio
5. DSP–Synthesis I, Additive/Subtractive Synthesis
6. DSP–Synthesis II, Amplitude/Ring Modulation

7. DSP–Synthesis III, Frequency Modulation
8. DSP–Synthesis IV, Stochastic Methods
9. DSP–Filtering
10. Filtering II
11. DSP–FFT
12. FFT II
13. DSP–Analysis
14. Analysis II
15. Review