'Tyger! Tyger! Burning Bright':
The Power and Beauty of New Media at IUPUI

Indiana University School of **inform**atics

Table of Contents

The IU School of Informatics offers an academic path for students from diverse backgrounds who are seeking a rewarding technology career that combines information technology with another area of study, thus opening varied career opportunities. Just as the discipline of informatics operates in a variety of contexts, the School of Informatics has programs on a growing number of IU campuses. The curriculum focuses on both the technical and human aspects of problem solving and emphasizes innovation and teamwork. The school understands the role of research in building a world-class faculty and in recruiting and educating outstanding students, but also places a primacy on its role in creating new knowledge and technologies for the betterment of people everywhere. The school also is firmly committed to collaboration with industry and government in order to hold up its side of the "three-legged stool" that supports economic growth and progress.

Cover: Tracey Grimes, School of Informatics' New Media Program student, created the art on the front cover. Jonathan Buckner, also a new media student, created the art on the back cover.

New Media Program burning bright

When we selected the cover of this issue of *Informatics*, I was immediately reminded of William Blake's resplendent poem "The Tyger," which asks of the tiger, "Tyger! Tyger! Burning bright, in the forests of the night, what immortal hand or eye could frame thy fearful symmetry?" Well, for our digital tiger, the artist's hand was none other than New Media Program student Tracey Grimes. Her work is an outstanding example of the caliber of art our students are creating with digital tools. Blake, of course, was the brilliant 19th-century poet and painter who glorified the force of creative imagination with visual art and poetry. That artistic spirit of imagination, synergy, and creativity is alive and well in the New Media Program. And so, in this issue of *Informatics*, we shine a brilliant light on one of our fastest-growing programs and the first degree program in the School of Informatics, the New Media Program.

New media is on the artistic end of the informatics spectrum, using digital technologies to create visual and musical art in virtual environments, Web pages, interactive software, and media yet unnamed. But its significance goes well beyond art. Digital media is comparable in importance to petroglyphs on rocks, the cuneiform "alphabet," the printing press, film, and broadcast media, and it will have similar long-ranging effects on human society. New media uses digital tools to instruct, communicate, and inspire, painting and composing with electrons. New media can (and does) produce entertainment. Many people think of it in terms of animation for cartoons. But it can equally produce scientific visualizations. Through a developing partnership with the School of Medicine, many of our students are becoming modern-day medical illustrators, making the invisible visible.

The New Media Program students profiled in this issue demonstrate the high quality of our overall student body. I hope you enjoy the examples of their art and illustration sprinkled throughout the magazine; the images demonstrate the depth of talent we have in our student-artists.

While new media is the star of this issue, we also feature faculty research in other areas, including e-mail bombs and a new project to create a digital library for bioinformatics. You'll also find a description of the program in chemical informatics, as well as profiles of the outstanding scholars who join the informatics faculty this fall.

I would like to take this occasion to let our alumni know that the school is now on firm financial footing, thanks to a number of visionaries and friends in the state. The Indiana General Assembly passed a budget that will provide the Indiana University School of Informatics with more than $12.5 million per year in annual state funding for the school's programs at IU Bloomington, IUPUI, and IU South Bend. My deepest thanks go to the many legislators and IT business leaders who have championed the School of Informatics since its founding. These friends have made the school a priority, because they grasp its academic and economic development potential. We also are grateful to the late governor, Frank O'Bannon, and our present governor, Joe Kernan, for their leadership and vision. Their investment in education, especially in the founding of the School of Informatics, will be a living legacy.

The School of Informatics is indeed rich with friends. You'll see a list of friends herein who have given to the Health Information Administration Program, the New Media Program, and the School of Informatics. While the state support provides a good and needed foundation, these gifts build upon this foundation and allow us to do things we could not otherwise do, especially student scholarships and faculty development. We are appreciative of our many friends who have played a role in the emergence and growth of what is now the School of Informatics. May our future be bright!

J. Michael Dunn

Welcome, Class of 2003!

Commencement at IUPUI

IUPUI commencement ceremonies were held in the RCA Convention Center in downtown Indianapolis on May 11.

This was the fourth year for the ceremony, which honored students graduating in December 2002 and May, June, and August 2003. This year, five associate's degrees, 66 bachelor's degrees, and 32 master's degrees were conferred. Of these 103 students, 18 graduated with distinction, high distinction, or highest distinction, having earned a 3.5 GPA or higher.

Included in the ceremony was the presentation of the Silicon Graphics Inc. Award. Each year, the SGI award is presented to a student for excellence in digital visualization. The 2003 award winner was Albert M. William, who received his master of science in media arts and science degree.

Four others were honored during the program. Joseph Defazio and Anthony Faiola were recognized for receiving Indiana University Trustees' Excellence in Teaching Awards, and Tia Hamilton and David Ratts were acknowledged by the Informatics Student Government for excellence in advising.

As Darrell Bailey said during the ceremony, "Our graduates epitomize optimism, teamwork, and the ability to solve problems — all essential traits for great success."
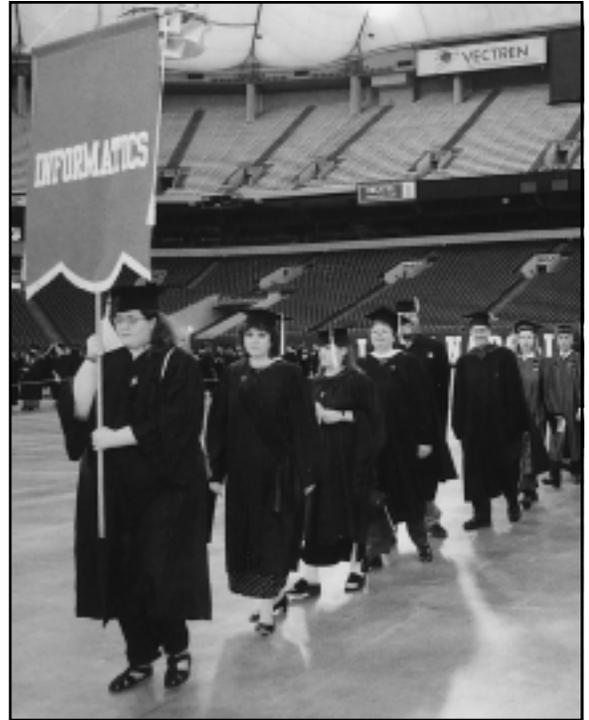
Top: School of Informatics banner carrier Jennette Fulda leads students in procession for the IUPUI main ceremony. Center left: IUPUI graduates prepare for the School of Informatics ceremony. Center right: Shantala Gelli receives her diploma from Executive Associate Dean Darrell Bailey, left, and Dean J. Michael Dunn. Bottom: Students gather with Assistant Dean W. Mark McCreary, right, for the IUPUI ceremony in the RCA Dome in downtown Indianapolis. Photography: S. Beals.

Commencement at IUB

Informatics students in Bloomington celebrated commencement on the Bloomington campus on May 10. Prior to formal commencement ceremonies in the Indiana Memorial Union's Alumni Hall, students gathered at the DeVault Alumni Center, home of the IU Alumni Association, for a luncheon and a formal program honoring their achievements. Despite an ill-timed thunderstorm, spirits were high as Bloomington honored its second class of informatics graduates. J. Michael Dunn, dean of the School of Informatics, praised the pioneering spirit of informatics students and honored their families for helping the graduates realize their dream. Sixty-six bachelor of science degrees and 10 master's degrees were awarded.

Kelli Kleindorfer, who received a BS in informatics, addressed the baccalaureate class, urging them to "look to the future." Matthew Hottell, recipient of the MS in human computer interaction, also addressed the graduating class. Two faculty members — Mehmet Dalkilic and Dennis Groth — were recognized with awards for outstanding teaching.

This year's graduates included the recipients of master's degrees in two new degree programs: bioinformatics and human computer interaction.

Congratulations to the Class of 2003!
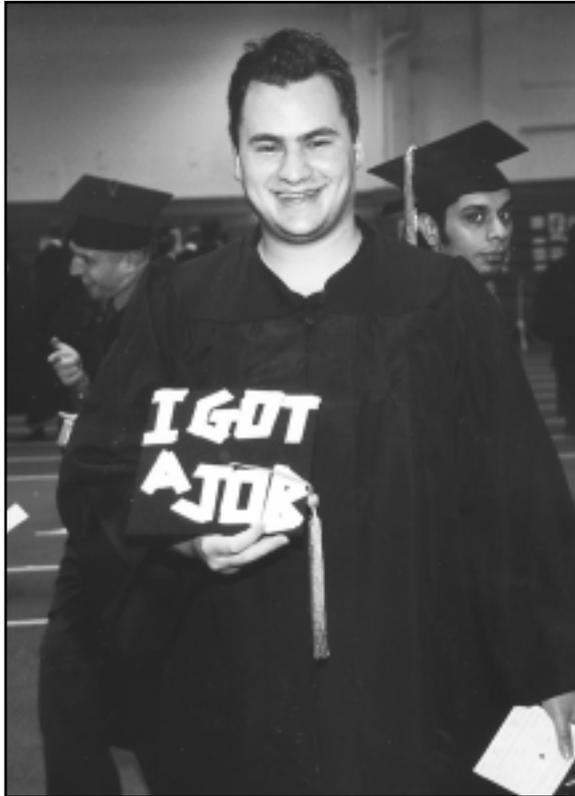
LEFT: Jordan Gilman is now a business analyst for Whirlpool. RIGHT: Sihui "Bruce" Zhao and Haifeng Zhao prepare for graduation with the assistance of Jennifer Lasimbang. BOTTOM: IU Bloomington's Informatics Class of 2003. PHOTOGRAPHY: Tom Stio.
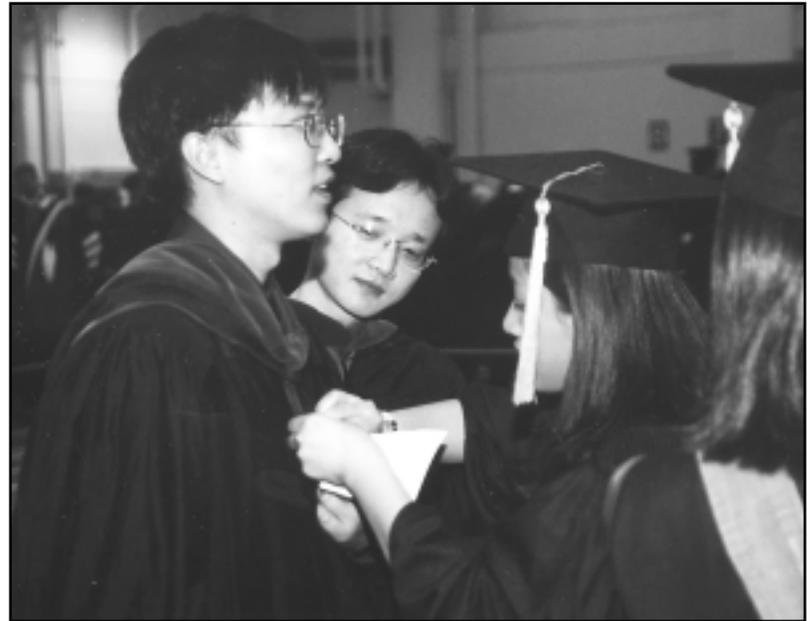
Global Internet2 fall conference features Informatics

The global applications conference of Internet2 will be held in Indianapolis this October and will feature a major research initiative developed by the New Media Program and the School of Informatics and a collaborative music performance event with the School of Music, School of Informatics, and Case Western Reserve University.

The first event, "Health Education for the 21st Century," is an outcome of the recently funded grant from the Lilly Endowment to the Ruth Lilly Health Education Center and the School of Informatics. More than 90,000 students who attend presentations in six theaters covering a range of health topics including nutrition, substance abuse, and developmental issues visit the center annually. The Internet2 event will feature a reception at the center, along with demonstrations, presentations, and exhibits dealing with issues surrounding health-education delivery and assessment at all age levels and the use of technology in addressing the problems. The event will highlight the center's redevelopment of its legacy systems, curriculum enhancement, assessment protocol, digital library asset management, and high-speed networking infrastructure. For attendees, the event will present an excellent opportunity to meet Internet2 participants from the Internet2 K20 Initiative, State Education Group Participants, International Partners, and the Health Sciences. Following the reception and demonstrations will be a keynote presentation from the health education/technology field on the topic "The Medium and the Message: Tomorrow's Technology and Today's Health Education Needs." From the School of Informatics, Skip Comer, project director, and Darrell Bailey, principal investigator of the grant, are coordinating the event.

The second event will be a collaboration with Indiana University (Darrell Bailey, Doug Pearson, and faculty and students of the IU School of Music and School of Informatics), and Case Western Reserve University (Thomas Knab and faculty and students of the CWRU Department of Music). It will feature a demonstration that will provide a visual sense of the latency inherent in the transmission of media over networks; provide a visual and auditory sense of the effect of latency on the synchronization of music performance; provide an overview of the antiphonal music style and the acoustics that contribute to effective use of antiphony; and explore the potential for utilizing network latency in antiphonal performance. Acoustically separated musicians will attempt synchronous performance across an Internet2 network connection that is manipulated to establish varying levels of latency. The network characteristics of latency, jitter, and loss will be visually represented as the musicians perform. Subsequent to the attempt at synchronous performance, the musicians will utilize inherent network latency to undertake antiphonal performance.

Both of these events illustrate the collaborative culture of informatics and are best-practice examples of the integration of information technology across the arts, sciences, and professions to address significant issues. They are helping focus an international spotlight on Indiana University and the School of Informatics.

— *Darrell Bailey*

New media faculty, students present to governors' spouses

New Media Program faculty recently conducted a business session at the National Governors' Association annual conference, which was held in Indianapolis Aug. 16–19.

An association for spouses of governors is actively involved in a wide range of projects. New Media Program faculty members Dan Baldwin, Clint Koch, and Durwin Talon were invited to present a seminar designed to aid governors' spouses in using their Web sites more effectively.

The faculty members and a group of students began by redesigning former first lady Judy O'Bannon's Web site. They presented their revision to provide practical information on design techniques and elements that make for an effective site. Spouses also received specific suggestions from the team for improvements to their own Web sites.

Other topics included a discussion of the latest trends and innovations in communications technology and the effective use of all new media sources, including e-newsletters.

Rosenbaum wins Mira Award

Howard Rosenbaum, associate professor of library and informatics science and adjunct associate professor of informatics, received Techpoint's Mira Award for contributions to IT education. The Mira Awards, formerly known as Cyberstar, honor the accomplishments of companies, organizations, and individuals who make significant contributions to health and life science, information technology, and manufacturing. More than 500 technology-related industry elite were on hand to see winners and finalists receive their awards during the Mira Awards Gala at the Indiana Roof Ballroom on Friday, May 16. The School of Informatics received the award in 2002 for contributions to IT education.

McGarvey returns to head Informatics Career Services

In so many ways, the success of the School of Informatics will be measured by the success of its students. For most people, this boils down to how well informatics majors are faring in the job market. No one is more keenly aware of the success of the school than the newly appointed director of Informatics Career Services, Richard L. "Dick" McGarvey, who accepted the post last spring.

"The placement area encompasses so much more than student counseling," McGarvey said. "It plays a key role in the success of the school because it fosters vital relationships with students, alumni, and employers." McGarvey counsels informatics students to prepare them for internships and career searches. In addition, he researches and develops opportunities with potential employers. With his primary office in Bloomington, McGarvey will also put his considerable expertise toward building a multicampus placement program for the school that will continue to serve informatics majors throughout their careers.

With career counselor Becky Vianden joining the team, programs are falling into place, and students are learning how informatics relates to careers. Their first priority was to establish programs to begin preparing students to consider career preparedness. Weekly career workshops train students on résumé writing, job-seeking strategies, and interview skills. But students also have ample opportunity to meet potential employers and pick their brains. This fall, a number of IT business leaders are making their way to Bloomington to talk with informatics students about their industries and the kinds of positions that could be available to informatics graduates. Speakers include Roy Dunbar (CIO of Eli Lilly), Mark Hill (president of Baker Hill), John Gibbs (executive vice president and co-founder of Interactive Intelligence), and many others.

Students are now posting résumés online and seeking internships through a new software package called E-recruiting. This Web-based application allows students to search for jobs or internships that have been posted by the Informatics Career Center as well as the more than 100,000 partners in the Experience Network, which includes employers using HotJobs and the Career Builder network. Students are also using E-recruiting to schedule interviews with employers, research potential employers, and view information about job fairs, career workshops, and other job-related events. Students and Informatics Career Services staff will be able to track job-search activities and provide assessments of effective processes, while maintaining the privacy of student information.

"I enjoy meeting and counseling students," new career services director Richard McGarvey said.

Coming out of a one-year "trial" retirement to accept the position in the School of Informatics, McGarvey was previously the director of the Career and Alumni Services Office for the School of Public and Environmental Affairs at Indiana University Bloomington. McGarvey has been teaching public and human resource management classes for SPEA since 1981.

"The legislature of Indiana has placed their trust in the School of Informatics to deliver the skilled IT workforce that Indiana needs," said J. Michael Dunn, dean of the School of Informatics. "We believe in our students and know they can find successful careers in the IT world. We mean to show Indiana that their trust in [the school] is well-placed."

— *Susan Quinn*

Project ENABLE:

A grid-based bioinformatics digital library

Javed Mostafa, the Victor H. Yngve Associate Professor of Information Science and associate professor of informatics, is leading a team of five IU researchers on Project ENABLE, applying advances in digital library technologies to the domain of bioinformatics. The project received an NSF award of $449,000. It is intended to foster growth in the nascent field of bioinformatics by making information resources more accessible, especially to bioinformatics students.

One of the challenges to the team is the wide variety of formats and representations that are used to store bioinformatics information. Little is known as to how digital library technologies — particularly in the realm of data description and exchange — can be applied in bioinformatics. Hence, a major challenge will be in the collection-building level — mapping metadata associated with bioinformatics information to data description standards compatible with digital library technologies.

Indiana University is the ideal home for a project like ENABLE because it is a well-known "hub" of bioinformatics information. IU is the site of the Drosophila Genome Flybase; IUBio Archive, which contains euGenes eukaryote genes data and bioinformatics tools and services; and Bionet news archive and related software. In 1998, IUBio became a central data warehouse for the Bio-Mirror project for high-speed worldwide mirroring of public bioinformatics data using the Internet2 infrastructure.

The fact that bioinformatics resources are spread across the globe and are updated frequently implies that Project ENABLE must accommodate growth and change; i.e., it must perform as an extensible networked resource. An integrated environment consisting of merging digital and grid computing technologies will be created to meet the need. A partnership established with the Indiana University Digital Libraries Program will ensure long-term sustainability of the ENABLE system.

Mostafa is pursuing ENABLE in collaboration with Katy Boerner, assistant professor of information science and adjunct assistant professor of informatics (IUB); Don Gilbert, associate scientist in biology (IUB); Snehasis Mukhopadhyay, associate professor of computer and information science and associate director for bioinformatics (IUPUI), and Mathew Palakal, chair of the Department of Computer and Information Science and co-director of the Informatics Research Institute (IUPUI).

> Project ENABLE will develop powerful visualization-based approaches to help students learn about associations at both the information level and the knowledge level.

But just knowing where to find pockets of information isn't enough. Students in bioinformatics must gain an understanding of the relationships among bioinformatics resources — data — and turn that information into knowledge by establishing associations among key biological objects such as genes, proteins, diseases, and drugs. ENABLE will develop powerful visualization-based approaches to help students learn about associations at both the information level and the knowledge level.

Prestigious faculty join School of Informatics

Mu Hyun "Mookie" Baik

Mu Hyun "Mookie" Baik is joining the School of Informatics at Bloomington as an assistant professor of informatics and chemistry. He holds a PhD from the University of North Carolina Chapel Hill and describes his major research interests as chemical informatics and computational, inorganic, bioinorganic, and physical chemistry.

Baik's research centers on examining complex chemical reactions using large-scale quantum chemical models and developing novel methods of extracting chemical information from these calculations. His goal is to develop an artificial expert system that can be used to efficiently search for novel

Baik

and rational design strategies for better anticancer drugs, robust industrial catalysts, or new materials, and discover the mode of action of metalloenzymes.

Baik's group is interested in understanding the electronic structure of molecules that either do something useful or something interesting. They are focused mainly, but not exclusively, on transition metal containing systems. Using quantum chemical methods to first derive a detailed understanding of what makes the molecule behave the way it does, they wonder what is needed to control its chemical behavior. Most of their research is done in close collaboration with experimental chemists who help them refine their computational models and test their predictions.

Baik's team is undertaking a variety of other research projects. Visit http://informatics.indiana.edu/people/profiles/baik.htm to discover more about Baik's research on Cisplatin, one of the most widely used and successful anticancer drugs and a catalysis that may play a major role in the future for making new polymer-based materials that are more robust and thermally more stable.

A. Keith Dunker

A. Keith Dunker, who recently joined the Indiana University School of Medicine as a professor and director of its Center for Bioinformatics, has also been offered an appointment to the faculty of the bioinformatics program for the School of Informatics in Indianapolis. Dunker is a true collaborator and recognizes the significance that interdisciplinary synergies can bring to the discovery process.

John Pieper

Dunker

A nationally renowned bioinformatics expert, his personal research interest is the relationship between folding of proteins and their function. Traditionally, the 3-D structures of proteins

Other faculty research projects

Filippo Menczer, professor of informatics at IU Bloomington, is the recipient of a prestigious NSF Career Grant to study scalable search engines and the design of adaptive topic-driven crawlers. Menczer first received the award at the University of Iowa last year, and he transferred the grant to IU when he joined the informatics faculty this fall. The grant will span the next four years.

William Aspray, professor of informatics at IU Bloomington, is conducting a meta-analysis of information technology worker research, in a project funded by the NSF. The purpose of the project is a meta-analysis of the 40 projects funded in the NSF's Information Technology Work Force program over its three-year history. The study will compare, contrast, and consolidate the knowledge of the ITWF projects with other research and implementation projects in the IT work force area. The final product will be a report that provides analysis that will guide further research on this topic, as well as recommend actions to decision-makers of various sorts (NSF and other local, state, and federal agencies, policymakers at local, state, and federal levels; and professional societies, the academic community; and individuals desiring more productive careers in the IT area). The NSF supported the one-year project with $80,000 in research funds. Aspray also submitted a request for funding to the NSF for a project to examine the applications of computing developments to the advancement of scientific and engineering disciplines. His two-year project is titled "Applied History of Cyber Infrastructure."

John Paolillo, professor of informatics at IU Bloomington, is completing a report to UNESCO describing the state of language diversity on the Internet. The contracted project will establish what is known of the current state of linguistic diversity on the Internet and will identify empirical methods that could be used to conduct large-scale surveys of online language diversity.

Faculty join school

have been viewed as key to their activities. His research has shown that many proteins have regions that do not fold into specific structures and that these "natively disordered" regions are critical to these proteins' functions. Because these functions relate especially to cell-signaling and regulation, many of these proteins are important in illnesses that are associated with cell-signaling defects, such as Alzheimer's disease, Parkinson's disease, and cancer.

Using bioinformatics as one of the tools to evaluate these proteins, Dunker's research promises to challenge fundamental assumptions in molecular biology about the role of protein structures.

Dunker has been on the faculty of Washington State University since August 1975 and a professor of biochemistry there since September 1983. He received his doctorate in biophysics from the University of Wisconsin in 1969 and studied molecular biophysics as a postdoctoral student at Yale University. He was a research associate in virology at Sloan Kettering before joining Washington State.

Dunker's wife, Ya-Yue Van, is president of Molecular Kinetics Inc., a scientific instruments company. The two are collaborating on commercialization efforts, based on his research, that have resulted in four Small Business Innovation Research grants and several other contracts.

Garland C. Elmore

Garland C. Elmore is Indiana University associate vice president for teaching and learning information technologies, dean of information technology on the Indianapolis campus, and associate professor of informatics (new media) and communication. His PhD in communication (1979) is from Ohio University; his MA (1971) and BA (1968) are from Marshall University and Concord College, respectively. His teaching specialties include technology literacy, new media, instructional systems, and higher education administration.

Elmore joined the faculty in 1976 to develop an academic program in communication technology. He established the curriculum and degrees, recruited the faculty and staff, and directed the program. As an extension of his work in communication, he collaborated closely with faculty in music, journalism, information science, art, and other disciplines to develop the curriculum and interdisciplinary degree proposals for an applied major in new and emerging media. He became a founding member of the New Media Program faculty and recently accepted a tenured appointment in the School of Informatics.

In 1989, Elmore moved into campus administration to lead the development of an information technology strategy for IUPUI. As part of the implementation, the central computing, media, and telecommunication support units were merged. He served as executive director of the new organization through the transition and then became associate dean of the faculties and associate vice chancellor at IUPUI. Elmore was appointed to his present position in 1997 when Indiana University created the Office of the Vice President of Information Technology to provide leadership for information technology and to extend support across all eight campuses of the institution.

As associate vice president, Elmore leads the UITS Teaching and Learning Information Technology Division. TLIT provides technology services to faculty, students, staff, and technology-support professionals across eight campuses. In his role as dean for information technology, Elmore is responsible for representing IUPUI IT interests in University Information Technology Services, for ensuring that services offered by other divisions meet the needs of students, faculty, and staff at IUPUI, and for leading selected IT initiatives on the Indianapolis campus.

Ariel Fernández

Ariel Fernández joined the faculty at IUPUI as a professor in the School of Informatics and the Center for Computational Biology and Bioinformatics. He will provide critical senior leadership for the school and the center and for continuing to build the graduate bioinformatics academic program within the IUPUI community.

Fernández holds a PhD in chemical physics from Yale University and is the recipient of numerous awards and honors: the Camille and Henry Dreyfus
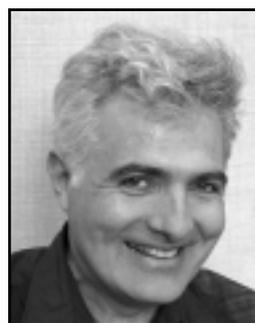
Fernández

Teacher-Scholar Award, an Alexander von Humboldt Fellowship, a Guggenheim Fellowship, and a McKnight Fellowship, among others. He is on the editorial board of the *Journal of Biological Physics and Chemistry*. Formerly of the Department of Mathematics at the National University of the South, in Bahia Blanca, Argentina, Fernández holds concurrent appointments as a visiting scholar at the Institute for Biophysical Dynamics, University of Chicago, and as guest professor at the Institute for Protein Research, Osaka University, Japan.

Fernández's stellar publications record, with more than 260 articles to his credit, is attracting international attention. One recently published article (*Physical Review Letters*, vol. 91, page/article 018102, year 2003) proposes a new type of force on molecules moving through water. This work was reported in the *Washington Post*, the *Los Angeles Times*, and others. Recently, the highly prestigious *Proceedings of the*

National Academy of Sciences published three of his papers on new theories that are having an immediate and major impact on current views regarding protein structure, stability, and interactions.

Robert Huber, director of the Max-Planck Institute for Biochemie and the 1988 Nobel laureate in chemistry, said of Fernández, "I believe his results are truly important and will have decisive implications in the prediction and manipulation of binding sites and protein-protein interfaces as well as in the understanding of the folding process."

Filippo Menczer

Filippo Menczer joined the Bloomington faculty as an associate professor of informatics and computer science. With a PhD in computer science and cognitive science from the University of California, San Diego, Menczer's research interests are diverse: scalable Web, text, and data-mining applications; Web intelligence, Web information retrieval, and distributed information systems; adaptive intelligent agents; e-commerce; Internet security; evolutionary computation, machine learning, and neural networks; and complex systems, social networks, artificial life, and agent-based computational economics.

In his early career, Menczer was affiliated with Domenico Parisi's ALife Group at the Italian National Research Council in Rome. There he worked on the statistical mechanics of evolutionary models simulating ecological environments. He later worked with Rik Belew in the AI Lab at the University of California, San Diego. His dissertation focused on interactions between individual reinforcement learning and evolutionary computation based on local selection schemes. He applied these adaptive algorithms to study cognitive models of distributed agents in complex environments, including both ecological simulations and Web-crawling applications. At

Menczer

UCSD Menczer wrote the LEE open-source artificial-life-simulation tool, distributed with Linux and used in experimental and instructional settings.

Menczer became an assistant professor in the management sciences department at the University of Iowa in 1998, and in 2002 he was appointed to the faculty of the interdisciplinary graduate program in applied mathematical and computational sciences. Menczer's research focused on scalable applications of text, data, and Web mining. He has a particular interest in adaptive crawling and in searching algorithms. He developed the MySpiders system, which allows users to launch personal adaptive agents that crawl the Web on their behalf. His work on the

connection between the Web's content and link structure was featured on the BBC World Service.

Menczer has been the recipient of Fulbright, Rotary Foundation, and NATO fellowships and is a fellow at large of the Santa Fe Institute. In 2002 he received a CAREER Award from the National Science Foundation.

Mahesh Merchant

Mahesh Merchant will be joining the laboratory informatics faculty as an associate professor. He specializes in scientific data management, bioinformatics, chemical informatics, and GLP validation of the Laboratory Informatics Management System.

Merchant received his BS in electrical engineering from Pune University, India, his MS in electrical engineering at California State University, Long Beach, and his PhD in biophysics at the University of Utah. Prior to accepting an academic position, Merchant worked for eight years at Pharmacia Corp. in the bioinformatics/information technology group. His prime responsibility at Pharmacia was to develop databases and new tools for data mining.

Merchant integrated LIMS systems for acquisition, analysis, and archiving of DNA-micro array chips and 3-D protein crystal structures and implemented a system for global pharmaceutical supply that required GLP validation.

Prior to joining Pharmacia Corp., Merchant worked for four years at Physio Corp. While there, he continued to develop a multilead electrocardiographic system for detection of ischemia and CAD, a project on which he had collaborated with other colleagues as a faculty member at the University of Utah. From 1983 to 1989, Merchant served as a software engineer for Evans and Sutherland in Salt Lake City and was involved in the development of a planetarium system and high-end flight simulators. He holds two patents and is a grant reviewer for the National Institutes of Health.

Yvonne Rogers

Yvonne Rogers joined the School of Informatics Bloomington faculty this fall with a joint appointment in the School of Informatics and the School of Library and Information Science. Formerly a faculty member at the School of Cognitive and Computing Sciences (now the Department of Informatics) at Sussex University in England, she continues to hold the position of professor in computer science and artificial intelligence there. While at Sussex, she co-founded the Interact Lab, the internationally known interdisciplinary research center concerned with possible interactions among people, technologies, and representations.

Rogers's research focuses on augmenting and extending everyday learning and work activities with

Faculty join school

interactive technologies that move beyond the desktop. She designs enhanced user experiences through appropriating and assembling a diversity of technologies, including mobile, wireless, handheld, and pervasive computing. A main focus is not the technology per se but the design and integration of the digital representations that are presented by them to support social and cognitive activities in ways that extend our current capabilities.

An overarching theme in Rogers's research is to theorize how we interact with external representations — be they diagrams, sketches, animations, multimedia, virtual environments, visualizations or other. In particular, she is concerned with developing a theoretical account of the external cognition that occurs when we create, interact with, and use different and multiple representations for various kinds of activities (e.g., learning, problem solving). A recent interest has been to explore how the notions of physicality, embodiment, and tangibility can be taken into account in the design of external representations. This line of research focuses on how physical artifacts and the environment can be augmented in novel ways with computation, digital representations, and even intelligence.

Rogers

Lecturers & visiting faculty

Thomas Haigh

Thomas Haigh is a visiting assistant professor of informatics at Bloomington. He grew up in England, where his youthful passions included reading, politics, magazine editing, and computers. Haigh completed two computing degrees, but became more challenged by the social and philosophical issues around technology and in the relationship between the world of code and world of people than in the very narrow questions addressed by most computer-science projects. With a Fulbright award, he undertook a PhD in the history and sociology of science department at the University of Pennsylvania, where he became a historian specializing in 20th-century America, in the history of technology, and in the social history of work and business.

He pursued work in the theory and sociology of organizations at the Wharton School, and from 2001 to 2003 he was at Colby College in Maine. For fall 2003 he is teaching in the School of Informatics, and in spring and summer 2004, he'll be a consultant on a historical project for the Society for Industrial and Applied Mathematics.

Haigh's dissertation, "Technology, Information, and Power: Managerial Technicians in Corporate America, 1917–2000," will yield two books. He is co-author of another forthcoming book on information technology in the 1990s.

Haigh is active within the history-of-computing community and serves as editor of the biographies department of IEEE Annals of the History of Computing. His next research project is on the social history of the PC, with a goal of providing a serious historical study of how people used their computers or why they bought them.

Matthew Hottell

Matthew Hottell is a lecturer in the School of Informatics at Bloomington, working with the senior capstone experience class for 2003–04. He will also be teaching an I101 Introduction to Informatics course in the spring semester.

Hottell grew up the Bloomington area and completed his first undergraduate degree in 2000 in political science at IU. The following year, he completed a second undergraduate degree in the IU computer science department and joined the first class of graduate students in informatics, studying human-computer interaction. He completed his MS in August 2003 with a thesis on the early introduction of young children to information technology.

His research interests include network and system security, the social and political effects of information technology, child-computer interaction, and the educational impact of computer technology.

John B. Ludwick

John B. Ludwick is a visiting lecturer in the New Media Program. Ludwick has been a 2-D animator for more than eight years. His preproduction work includes storyboarding, conceptual art, and character design, and he has directed 2-D and 3-D animation television spots for the Cartoon Network, PBS Kids, Toon Disney, and many others.

He has lectured at the Savannah College of Art and Design and SIGGRAPH 2002 and has exhibited his work throughout the southeastern United States.

Ludwick earned his bachelor of fine arts degree in graphic design at the Savannah College of Art and Design and his master of fine arts degree in sequential art (the art of visual storytelling), the first such master's degree conferred in the United States. Prior

Faculty help bring new life to international nursing library

In the spring semester of 2003, faculty members from the School of Informatics began intensive work with Sigma Theta Tau International, the Honor Society of Nursing, to improve the society's revered but underutilized online library. STTI headquarters are located on the IUPUI campus near the School of Informatics.

The original 1979 resolution for STTI's Virginia Henderson International Nursing Library called for "a national nursing library resource offering services to nurses and those interested in nursing." Soon after, there was an additional call for "a national clearing-house for information regarding nurse researchers and nursing research."

Ten years later, the first computer was purchased for the library, enabling the beginnings of an electronic library. With that development, and with the establishment of a database that stored findings of research studies, nursing knowledge was made available in an electronic format (Graves, 2000).

Josette Jones and Steve Mannheimer

Faculty join school

to accepting the New Media Program academic position, he worked for the broadcast design firm Primal Screen in Atlanta.

This year, Ludwick won the Gold Broadcast Design Award for Best Television Web Site Promotion and shared a Potluck Gold BDA for the Siggraph short *Road to San Antone*, which he storyboarded. Ludwick designed, directed, and animated the short *Baguira*. This depiction of one minute in a house cat's life was shown in Brazil's *Anima Mudi* festival this year.

Malika Mahoui

Malika Mahoui is a visiting assistant professor in informatics. She teaches I501 Introduction to Informatics and I308 Information Representation.

Her current research interests are focused on data management and data integration in the field of bioinformatics. She is also involved in a project to develop an integration system for bioinformatics database search services and software tools.

Mahoui's other research interests relate to algorithmic and design issues in database systems, concurrency control and transaction processing, digital libraries, data mining and text mining, security on the Web, and data management in mobile computing.

After receiving her PhD in computer science from the University of Montpellier II, Montpellier, France, in 1995, Mahoui worked for four years as an assistant professor at the University of Waikato in New Zealand. Most recently she has been involved in research and teaching at Purdue University, the University of Pennsylvania, and in the Department of Electrical and Computer Engineering at IUPUI.

Albert William

Albert William is a visiting research associate in the New Media Program. He specializes in 3-D design and animation of scientific and medical content and teaches 3-D animation.

William received his BS in biology from Bowling Green State University, Bowling Green, Ohio, and his MS in media arts and science from the School of Informatics at IUPUI. He is the recipient of the 2003 Silicon Graphics Inc. Award for excellence in computational sciences and visualization at Indiana University.

For the past 12 years, William has worked for the Indiana University School of Medicine and has been involved in numerous projects for both the School of Medicine and the School of Informatics.

He was involved in creating music and images for the Chichen Itza and Uxman virtual tours as part of the Informatics Research Institute's CLIOH project. He also developed and produced "Genomics," an informative 3-D animation for use in the IU School of Medicine and INGEN initiative.

William created "The Cell — A Virtual Tour," an interactive multimedia CD-ROM designed to be used as a learning aid in cellular biology. This presentation utilized state-of-the-art 3-D animation and interactive content to deliver complex subject matter in an easy-to-use environment. His animation "The Neuron" can be viewed as part of the Indiana State Museum's "Tomorrow's Indiana" exhibit.

Nursing library

In 2000, the library received a $2 million grant from local philanthropist Ruth Lilly for continued development of knowledge resources. A portion of this grant has been gifted to fund a Ruth Lilly Nursing Informatics Scholar position, currently held by Dr. Marcelline Harris of the Mayo Clinic Graduate School. Harris formed a team of experts to extend the functionality of the VIHNL from library to Web-based portal for nursing knowledge resources while retaining and enhancing the rich legacy of knowledge modeling. The project will continue through July 2004.

Professor Josette Jones, a Belgian-born informatics nurse researcher with joint appointments in the schools of Informatics and Nursing, was an original member of the national three-woman team that also included Dr. Cheryl Bagley Thompson from the University of Nebraska Medical Center. Jones enlisted the aid of first-year new-media Professor Steve Mannheimer to assist in conceptualizing the graphic interface and user experience of the library site.

Despite the international reputation of STTI and Virginia Henderson, database analysis of use patterns of the VHINL site indicated that the library itself generated very little traffic, and much of that appeared to comprise superficial online glances at the available resources without prolonged exploration. In short, the library was not serving the nursing profession as well as it was intended.

The goal for the Indiana University team is to develop a "tell and ask" functional interface, where the nurse communicates with a knowledge base by making logical assertions (tell) and posing questions (ask) (Gruber, 1993).

Basically, the redevelopment of the VHINL Web site required the same sort of three-step process that might be focused on any Web development project: (1) assess the current situation to identify strengths and weaknesses, opportunities for improvement, and dangers to avoid; (2) envision goals for improvement and strategize paths toward those goals; and (3) assemble the resources needed to attain those goals and implement the strategy.

Jones and Mannheimer quickly established a game plan to analyze all the components of the existing library site, from the graphic interface to the content of the library collection. The team moved on to the identification of the audience of potential users STTI and the VHINL hoped to attract, conducted and analyzed a survey of professional nurse researchers to establish their perceptions and preferences in online library use, and conceptualized the needed improvements.

With the help of informatics graduate students Dan Dippel and Steve Thompson and research associate Robert Skip Comer, Jones and Mannheimer moved steadily toward a new look and operational feel for the VHINL Web site.

At every point, this development was guided not only by the goals of an organization dedicated to service and support to health-care professionals but also by a strong commitment to quantifiable user preferences and usability patterns. As is the case with the most successful informatics applications, the team was committed to crafting a Web experience grown from just the right blend of data analysis, institutional mission, innovative user experience, a common-sense approach to usability, and the essential element of graphic artistry. All of these elements combined will bring a new energy to the library's identity and visually proclaim a new sense of usefulness and openness.
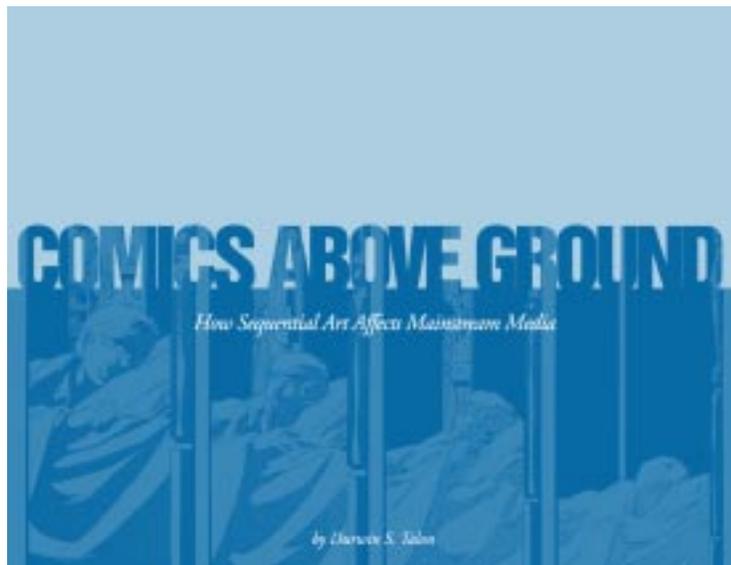
Talon book nearing completion

Durwin Talon, associate professor in the School of Informatics' New Media Program, is nearing completion of a new book, *Comics Above Ground: How Sequential Art Affects Mainstream Media*. The book, slated for publication by Tomorrows Publishing in April 2004, focuses on the tremendous effect comics have had on popular culture and how those effects are influencing other storytelling mediums.

Assembled in *Comics Above Ground*, professionals talk about their inspirations and training from the comics profession and its affects in "mainstream media," including: conceptual illustration, video game development, children's books, novels, design, illustration, fine art, storyboards, animation, motion pictures, and other media.

Bruce Timm, Bernie Wrightson, Louise Simonson, Greg Rucka, and other creators share their perspectives and their work in both comics and their "other professions." This book also boasts career overviews, never before seen art, and interviews, as well as featuring the creators' favorite works in comics.

In addition, another of Talon's illustrations will be used in a book on video game design. Authored by David Freeman, *Creating Emotions in Games* (forthcoming), will be published by New Riders.

Faculty awards: The envelope, please

Three faculty members from the School of Informatics on the IUPUI campus have recently received awards.

Joseph Defazio, assistant professor in the New Media Program, was the winner of a Gold Muse Award. The award was presented in May by the Media and Technology Standing Professional Committee of the American Association of Museums for excellence in all varieties of media programs produced by or for museums.

Defazio edited, compressed, and converted a series of five videos for the Eiteljorg Museum of American Indians and Western Art. These videos are part of an exhibit titled "Mihtoheseenionki (The People's Place)," where visitors are invited to explore the rich and complex art history and cultures of Native Americans and their influence on the Indiana region. The videos allow the viewer to see and hear Native American artists, linguists, and others talk about their culture and art.

The judges for the Muse Awards said, "This product did an amazing job of connecting real people to real objects. … This is truly a beautiful product. … Highly successful integration of video into an exhibit to highlight the main message — indigenous peoples are here now — not just in history books."

Currently teaching N100 Introduction to Digital Media Principles and N511 Foundations of Digital Arts Production for the New Media Program, Defazio has a fascination with computers and music. So, it is not surprising that his areas of expertise include multimedia production, multimedia distance education, music and recording technology, and Web development research.

He received both his bachelor's and master's degrees in applied computer technology from Indiana State University and also holds a BA in music performance from ISU. He has certifications in A+ and Novell and is a member of the American Society of Composers, Authors, and Publishers.

Defazio is a two-time winner of the Glenn W. Sample Award for Excellence in Instruction.

In April 2003, **Joe Defazio** and **Anthony Faiola** were awarded the IU Trustees' Teaching Award for Excellence in Teaching. The TTA honors individuals who have a positive impact on learning through their direct contact with students in the classroom. Recipients of the award must demonstrate their effectiveness in facilitating student learning, provide leadership on teaching and learning issues, and pursue continuing professional development.

Anthony Faiola, a three-time Fulbright Scholar, is an associate professor in the New Media Program and the associate director of the School of Informatics' Human-Computer Interaction Graduate Program on the IUPUI campus.

Faiola has 25 years of experience in higher education, industry, and administration, having worked in a variety of roles and environments in the areas of information design, computer graphics, and HCI.

His teaching and research focus revolves around user-centered design theory, practice of interactive products, Web usability, and HCI education, resulting in the extensive list of publications and books he has written since the late 1980s.

Faiola's academic experience began with a six-year period of international administration in Russia. He was a member of the faculty at Purdue University before coming to IUPUI in 2000. Faiola returned to Russia as an invited lecturer (1998–99) and as a Fulbright Scholar (2000) at the St. Petersburg Institute of Fine Mechanics and Optics, Department of Engineering and Computer Graphics. With the goal of maintaining this international dialogue with colleagues from around the world, he has guest lectured at multiple universities in the Netherlands, Germany, and Russia on the subject of usability theory and testing and HCI education. He recently completed his second Fulbright appointment as a senior specialist at Moscow State University of the Printing Arts and is currently the chair of an HCI Parallel Session titled "HCI Education: Problem-Based Learning — Online and Off," which was presented by six faculty at the June 2003 HCI International Conference on the island of Crete, Greece.

Clinton Koch, clinical assistant professor in the New Media Program, is the recipient of the 2003 Robert H. Shellhamer Outstanding Educator Award. The award was presented on April 25 at the annual ceremony hosted by the Undergraduate Student Assembly.

The award is named for Dr. Robert Shellhamer of the School of Medicine, a professor noted for his dedication to students and teaching. Each year, students nominate faculty members whose perfor-

Faiola

MIHTOHSEENIONKI (THE PEOPLE'S PLACE): An interactive map invites people to learn about Native American cultures.

Defusing untraceable e-mail cluster bombs

You just interviewed for a new job, and you think the job is yours. So you check your e-mail. Then you check it again. While you bite your nails and hope for a job offer, your daughter's jilted boyfriend is across town launching a silent cyberattack against your e-mail account. You don't know it yet, but an untraceable avalanche of e-mail is about to stuff your mailbox and lock you out — and cost you the job.

You are the victim of an e-mail bomb. Unlike other known distributed denial-of-service attacks that flood a victim's computer with vast volumes of data traffic, e-mail "bombers" don't need to take control of other computers to perpetrate the attack. What's more, attacks are difficult to detect or trace because nothing distinguishes an attack from normal Web-based requests.

This new kind of e-mail-based attack was recently identified by **Filippo Menczer**, formerly of the University of Iowa, now professor of informatics at Indiana University, and Markus Jakobsson, principal research scientist at RSA Laboratories (the research arm of RSA Security). Menczer and Jakobsson uncovered the e-mail "bomb" and developed a series of simple countermeasures.

The attack involves bots that pose as the victim, filling out forms on many Web sites (or "launch pads") for e-mail newsletters or other information, causing them to send e-mails or text messages to the victim or to have phone calls placed. The launch pads do not intend to do any damage — they are merely tools in the hands of the attacker.

This attack takes advantage of the fact that most sites don't verify that the submitted e-mail address or phone number corresponds to the user who fills in the form. This allows an automated attacker to enter a victim's e-mail address or phone number in a tremendous number of forms, causing a huge volume of messages to be directed to the victim's mailbox, potentially shutting down the victim's e-mail service. Standard attempts to verify an address do not work, since many sites send a message to the person requesting information, asking the latter to confirm. This only generates more traffic toward the victim.

To prevent the attack, creators of Web sites can use a verification technique by creating a page containing a "mailto" link (a Web link that directs a user to an e-mail address), with itself as an addressee. Legitimate users would send the message to validate their request, and the site's mailing list manager could verify that the sender matches the e-mail address submitted via the Web form before contacting the requester. Menczer and Jakobsson also offer strategies for individuals to use to protect themselves from attack.

Menczer and Jakobsson outline these attacks in a paper titled "Untraceable E-mail Cluster Bombs: On Agent-Based Distributed Denial of Service." Menczer said that his primary purpose in writing the paper was to make Web developers aware of the threat so they can take action to prevent this kind of abuse. "We believed it is important to let people know about the problem and how easy it is to prevent," he said.

For more information about these e-mail cluster bombs and how to prevent them, contact Jakobsson at www.markus-jakobsson.com or go to http://arxiv.org/abs/cs.CY/0305042 for a reprint of the paper.

Awards

(*continued from page 13*)

mance in the classroom exemplifies Shellhamer's enthusiasm and commitment. The award recognizes the qualities of an educator who respects students and encourages their participation in the educational process.

Koch has taught 3-D design for the School of Informatics's New Media Program for the past three years. He received his BA in psychology from IUPUI and his MS in media arts and science from the School of Informatics on the IUPUI campus.

He teaches computer simulation/animation, digital media motion, simulation methods, and advanced interactive design applications. Koch's interests in 3-D design include architectural recreations, athletic motion animation, character rig and animation, and physics-based dynamic simulations.

He has also been involved in numerous projects for the School of Informatics. Koch developed a simulation for the University of Illinois that involved timing and motion kinesiology in athletic movements and has created two simulations for the Cultural Library Indexing our Heritage project. One of these projects, Uxmal, can be viewed at the Indiana State

Koch

Museum. The other is a recreation of Angel Mounds, an ancient Indian site located in southern Indiana. Koch's animations have been displayed in commercials, magazines, and museums.

Blending computing and chemistry:
ChemInfo at IU

by Gary Wiggins, Director, Bioinformatics and Chemical Informatics Programs

Introduction

A revolution is under way in chemistry. One need only look at the increasing frequency of coverage of computer-based topics in the major news journal of the American Chemical Society, *Chemical & Engineering News*, over the last few years to recognize that every field of modern chemistry relies on the ability to use information technology in one form or another. Yet those in each field of chemistry tend to focus only on the aspects of chemical informatics of most importance to them. To many chemists, the storage and retrieval of articles published in professional journals constitute the main focus of chemical informatics, while to others, the storage and manipulation of spectra and other numeric data are paramount. Still others might emphasize molecular modeling and visualization.

Chemical informatics applies the techniques of computer science to assist in solving chemistry problems that are otherwise unsolvable. "Chemistry Plans a Structural Overhaul" is the title of an article on the birth of chemical informatics that appeared in the Sept. 12, 2002, issue of the prestigious scientific news journal *Nature*. The *Nature* article notes that just as the genomics boom caused a great need for bioinformaticians, "an explosion in the amount of data generated by combinatorial chemistry and other high-throughput approaches to drug screening and drug design is creating a demand for chemoinformaticians."

Chemical visualization, modeling, and other techniques, in conjunction with combinatorial chemistry and high-throughput screening, are revolutionizing chemical research. Chemical informatics creates an integrated information environment in which all aspects of chemical research and development can be dealt with in a unified system. Not only can chemical structures be used as search keys in such systems, but also unknown properties and spectra can be predicted with a high degree of accuracy using chemical informatics tools and techniques that draw on the existing knowledge base of chemistry.

Pharmaceutical companies are now using sophisticated modeling techniques to predict the toxicity of a potential drug long before they might have expended significant funds to develop a new chemical entity that would never make it to market due to a failure in clinical trials. Another use for chemical informatics in the drug industry is to analyze the interactions between a drug and the receptor site and design molecules with an optimal fit. Once the target molecules are developed, libraries of compounds are screened for activity with one or more relevant assays using the technique known as high-throughput screening.

To further develop such systems will require a work force with a solid grounding in chemistry and an expert grasp of the computer technology available to advance the field. Chemical and pharmaceutical companies are in great need of people with good chemistry knowledge and computer skills to handle the data. In addition, database producers, chemical software developers, and those in the primary and secondary chemical publishing areas offer attractive opportunities for graduates. Companies involved in medical, environmental, and chemical instrumentation will increasingly depend on the incorporation of chemical informatics to be successful competitors. The chemical informatics program in the School of Informatics is designed to train graduates who can satisfy these needs.

ChemInfo at IU

With Chemical Abstracts Service adding more than 700,000 new chemical substances to its database each year, it is obvious that the size of the information problem in chemistry is staggering. Massive amounts of physical and chemical property data are being collected and integrated with biological information. This presents an information problem of monumental proportions, with even more data being generated as attention shifts from the genome to the proteome. Efforts are under way to combine molecular simulation, chemical informatics, and data-analysis techniques to solve problems of chemical information acquisition, management, and use. Chemical informatics is thus helping to organize and analyze scientific data, share chemical information, and develop novel compounds, materials, and processes.

Chemical informatics is so deeply woven into chemical research and teaching activities that some fail to accept it as an emerging subdiscipline of chemistry. As a result, chemical informatics suffers from the lack of rigorous, well-developed academic course work that is found in other chemistry subdisciplines (analytical, biochemistry, inorganic, organic, and physical chemistry). Nevertheless, there is beginning to be recognized a need for people who are trained academically in chemical informatics. "Pharmaceutical industries are contending with an explosion in data generated by combinatorial chemistry and the avalanche of information spilling from the Human Genome Project. Making sense of it all is a formidable task — one that's crying out for more scientists well versed in bio- and chemoinformatics." This year has seen the appearance of not one, but two textbooks in chemical informatics.

The Chemical Informatics Program at IU

This country needs a center of excellence in chemical informatics, one that will demonstrate that joint industry/academic chemical informatics research is not only possible, but profitable in the United States. Indiana University is in a unique position to develop such partnerships in chemical informatics research. IU has considerable strengths in chemistry, computer science, informatics, and library/information science, but a coordinated effort was required to put together programs that attract students with interdisciplinary interests in these fields.

The chemical informatics curriculum at IU was developed jointly by the School of Informatics and the chemistry departments at IUB and IUPUI. It educates students in the following aspects of chemical informatics:

• information acquisition: methods used for generating and collecting data empirically (experimentation) or from theory (molecular simulation);
• information management: storage and retrieval of information; and
• information use: data analysis, correlation, and application to problems in the chemical and biochemical sciences.

No academic institution in the country is better situated than Indiana University to offer degree programs in chemical informatics. IU is a superb place to build a chemical informatics program because of its close proximity to major pharmaceutical companies and chemical informatics organizations, its long history of innovative, technology-based chemical information services, and the well-established chemical information specialist program in the IU School of Library and Information Science. The program in chemical informatics spans the two main campuses of Indiana University, drawing on faculty on the IUB and IUPUI campuses, as well as the innovative research programs of the IU School of Medicine in Indianapolis.

On the IUPUI campus, a new track in laboratory informatics that started in the fall of 2003 is the first of its kind in the nation. As the School of Informatics moves toward PhD programs, our position can only improve.

A time when pharmaceutical and chemical companies are struggling to keep up with the incredible flood of data that modern chemical and biological research produces presents a unique opportunity for Indiana University. Both the IUB and IUPUI campuses offer programs to study chemical informatics, programs that are unmatched at any other university in the United States. We are forging relationships with existing IUB/IUPUI bioinformatics and proteomics research programs, as well as creating opportunities for our chemical informatics students to engage in relevant research projects and internships with pharmaceutical, chemical, and chemical informatics companies.

The breadth of the topics included in chemical informatics can be seen from the subjects covered in the graduate C571 Chemical Information Technology course:

• Commercial databases and vendors
• Spectral and crystallographic databases
• Chemical patent searching
• Chemical nomenclature
• Chemical structure representation/searching
• Laboratory automation and electronic notebooks
• Chemical reaction searching
• Molecular visualization and modeling

Students at IUPUI have an opportunity to enhance their training with the laboratory informatics track, which covers instrumentation and data interfacing; laboratory notebooks; and Laboratory Information Management Systems.

Cooperative programs with Sheffield and UMIST

The chemical informatics program at the University of Sheffield in England is generally recognized as the premier program in the world. The School of Informatics is developing cooperative programs with Sheffield and another British institution, the University of Manchester Institute of Science and Technology. One positive development is the agreement to utilize the facilities of the University of Sheffield to broadcast via videoconference C571 lectures delivered by Adjunct Professor John Barnard, a Sheffield graduate, who lives there. The newly initiated program at UMIST also holds promise of future cooperative activities. Joint initiatives with Sheffield and UMIST might include development of instructional modules; sharing of visiting lecturers and utilizing videoconferencing technology; exchange of students; and joint research projects.

Conclusion

Almost a decade ago, an article in *Chemical & Engineering News* noted "the growing interconnectedness of laboratory research activities with molecular modeling, computational chemistry, chemical analysis, database searching, and general information retrieval." In chemical informatics, the single most noteworthy achievement of the last few decades was the development of software for the coding and retrieval of chemical structures. This has resulted in ways of searching and associating factual information about chemistry that utilize the universal language of chemistry, the chemical structure. Research in this area has moved beyond the 2-D depiction of molecules into the much more complex arena of the storage and retrieval of 3-D representations of chemical structures. Thus, the interactions that chemical substances themselves undergo in the real world are now being mapped into virtual 3-D information systems. The special techniques of chemical informatics and related disciplines are being brought to bear on complex chemical problems, resulting in advances on a scale unthinkable even a decade ago.

In "Educating the Next Generation Scientist," Helen Gillespie points out the need to introduce into the chemistry curriculum modules dealing with information technology and computer topics ranging from networking issues to distributed processing to interfacing. Herman Skolnik, then editor of the *Journal of Chemical Information and Computer Sciences*, stated in 1984, "In view of the fact that chemical information science is a discipline of chemistry, one in which several thousand chemists are shaping meaningful careers, we should expect some graduate schools to conduct research in this discipline, preparing students for potential careers as chemical information specialists."

Now there is a new designation for the profession envisioned by Skolnik: chemical informatics. Indiana University is bringing to reality Skolnik's dream of training chemical informaticists.

Matthew Bell
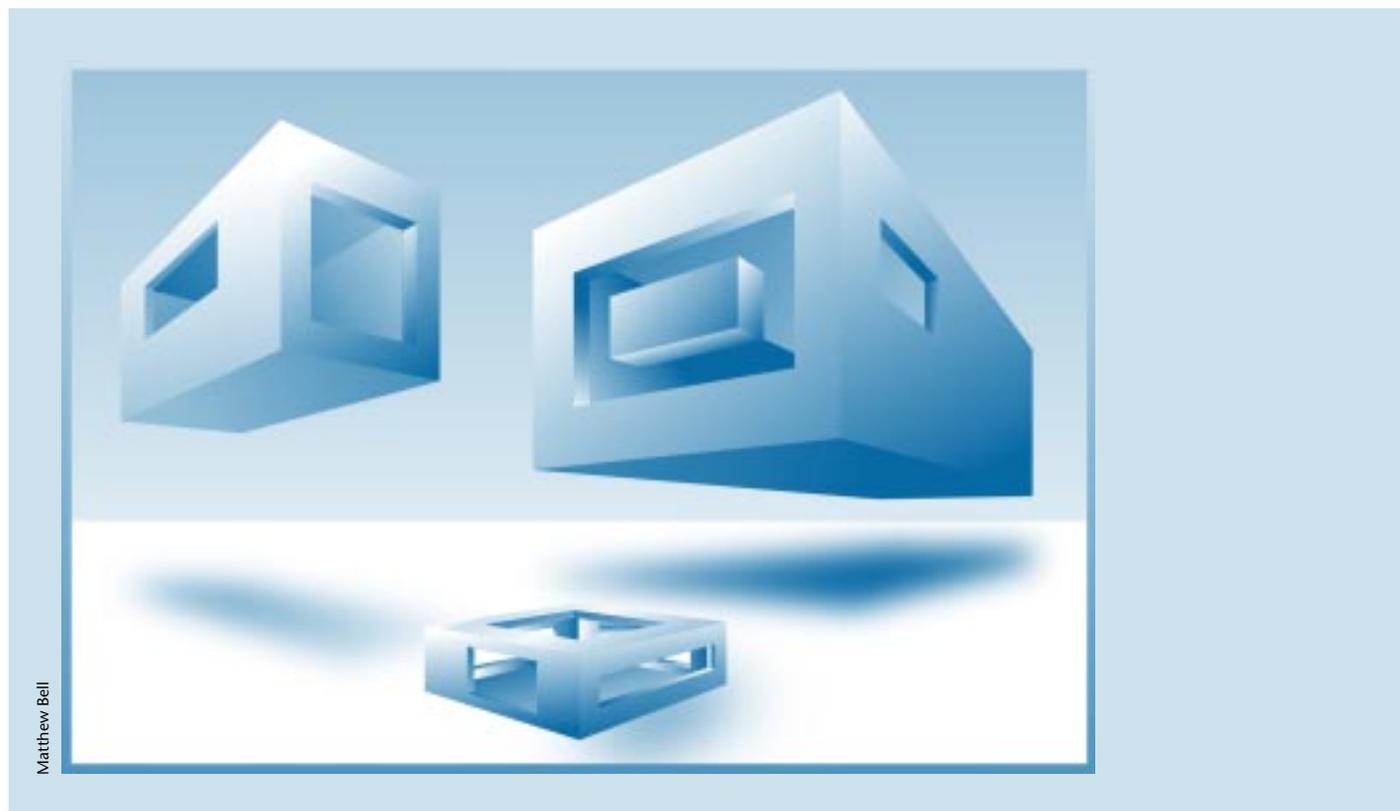
New Media Program thrivin

The purpose of the School of Informatics' New Media Program at IUPUI is to enhance communication through the design, development, management, integration, application, assessment, and deployment of new and digital media. The program is aimed at helping students master the challenges of the information age. It combines images, sounds, and text in new ways, changing how users experience and interact with communication and information. Focused on applied research and application, the program is oriented toward professional practice and reflects the convergence of art and technology.

Developing a program was prompted, in part, by requests from Indiana's business and industry leaders to create a high-tech, multimedia course of study for various career fields. By the early '80s, Indiana's manufacturing-based economy was rapidly becoming outmoded. Public, private, and nonprofit sectors were actively seeking individuals skilled in Web design, multimedia production, and other media arts. The program was also designed to complement local, regional, and statewide economic development efforts to build a technology-savvy workforce. There was a strong need for Indiana, Indianapolis, and IUPUI to embrace technology and research efforts and to bring Indiana to a competitive level of influence in the emerging new media fields.

The proposal to form an academic unit in new media evolved from years of planning and discussion at IUPUI. Faculty and administrators from six IUPUI campus units representing new media "member units" began meeting in 1997 to establish cooperative roles in planning curricula, defining course offerings, and supporting multiunit use of existing technology. Planners agreed that without a centralized academic unit in the new and growing field, IUPUI would find it difficult to administer course work and degree progress for students and to propose studies within this new area of inquiry.

In 1998, Indiana University approved the new degree program, which was structured as an interdisciplinary collaboration integrating the resources of six research schools. IU schools of Music, Library and Information Sciences, and Journalism, and the Herron School of Art, along with the Purdue schools of Science and Engineering and Technology, pooled their resources and created a partnership uniquely suited to develop a discipline that combines established fields of study and practice with emerging communication technology.

Darrell Bailey, then the director of the IU School of Music on the IUPUI campus, was appointed director of the New Media Program. Plans to develop a school of informatics were under way as well. When the School of Informatics was formally

> The term "new media" refers to the rapidly evolving disciplines of film, graphics, text, and audio communications such as the Internet, CD-ROM, and multimedia databases.

Benjamin Messer

approved by the Indiana Commission for Higher Education in November 2000, the New Media Program moved to become a part of the School of Informatics.

In the fall semester of 1998, 38 undergraduate and 43 graduate students were enrolled in the New Media Program. The curriculum consisted of three undergraduate and three graduate courses. Facilities were limited to one lab, located in the Mary Cable Building, and there was only one full-time faculty member.

Things have changed dramatically over the past five years. In 1998, enrollment projections indicated that by the 2002–03 school year, 211 undergraduate and 25 graduate students would be pursuing degrees in new media. In the fall semester of 2003, the New Media Program is offering 30 undergraduate and seven graduate courses to 558 undergraduate and 82 graduate new media students.

The curriculum includes course work in digital media, interactive media, digital sound, online document development, game design, development and production, computer simulation and animation, design methods, digital media production, and the list goes on. Mary Cable is still "home" for the students, who now have access to five labs, and the faculty has grown to 11 full-time members.

The 120 alumni of the program are working professionals in various areas, including Web design, animation, marketing, education, project management, and graphic design, as well as entrepreneurial endeavors.

The dream of a state-of-the-art facility began with the development of the School of Informatics. At that time, no location had been decided upon and discussion centered around finding enough occupants to fill the space. The dream has become a reality as the Informatics and Communication Technology Complex is nearing completion. Located at the corner of West and Michigan streets in downtown Indianapolis, this beautiful edifice should be ready for students by the fall semester of 2004.

An integral part of the growth and success of the New Media Program is the expertise of its faculty and the talent of its students. You will be able to see a sampling of student work throughout this edition of *Informatics*. The students' ability and enthusiasm is astounding and infectious. As they work with and learn from a world-class faculty, the quality of the work they are producing is amazing.

The program has also established strong working relationships with nonprofit organizations, businesses, government agencies, and other programs in education. Through collaborations and projects with the Indiana State Museum, the School of Nursing, Indiana Humanities Council, Delphi Automotive, PBS, the Little Red Door Cancer Agency, Indiana's 2016 Initiative, and many others, students gain real-world experience and develop partnerships important to both the university and the community.

The New Media Program has and will continue to grow and excel as a vital part of the School of Informatics, anticipating and responding to changes in technology, design, theory, and application.
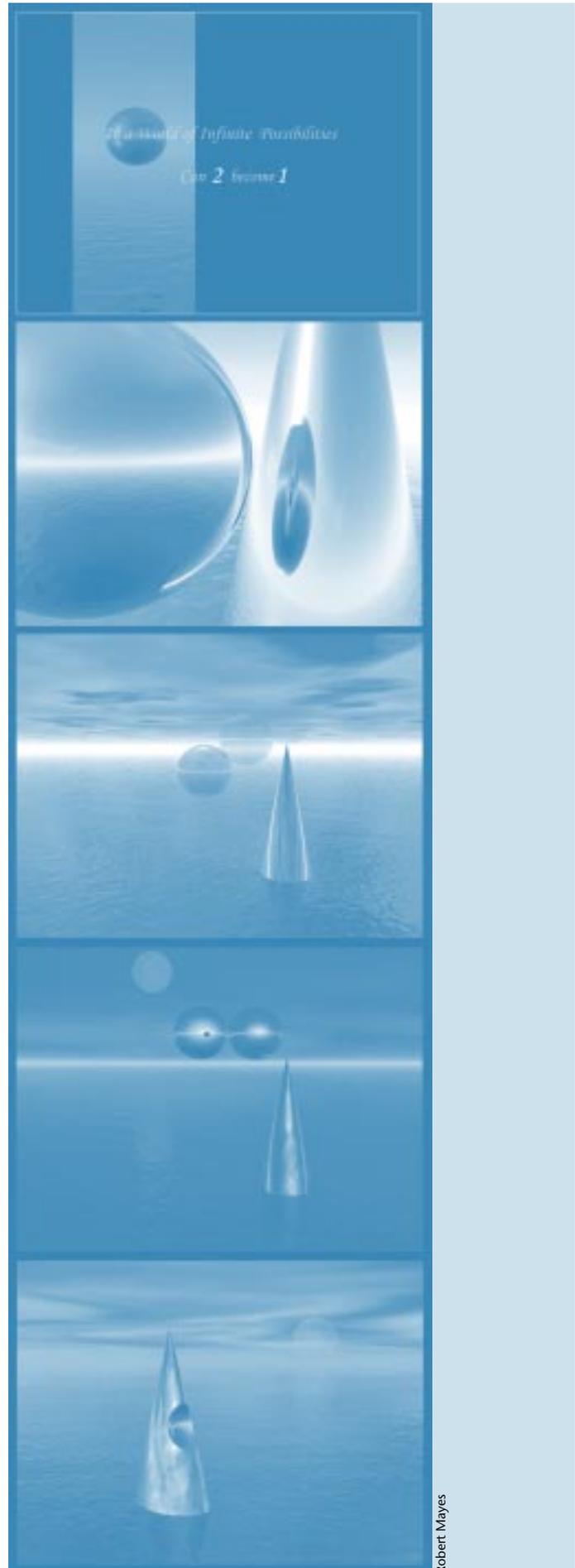
Robert Mayes

Program, facilities help students realize their potential

As many of you know, we are looking forward with great anticipation to moving into a beautiful new building that was in planning even before the New Media Program was established. This facility that will be the gateway to the campus will replace the Mary Cable Building that many new media alumni remember from the first years of the program.

When the Informatics Complex opens for classes in fall 2004, it will crystallize the vision that planners had in 1997 for a new media program that would provide students a curriculum focused on applied research and application of new and digital media for communication in the information age. Equally important is that the new building will consolidate — in a shared space — the School of Informatics with journalism, music, and general academic classrooms, as well as IUPUI's information technology services.

Within higher education, the coexistence of major academic and service units within one building is a unique model that more closely reflects environments in business and industry. In many ways, the School of Informatics and its 10 degree and program offerings will be the catalyst to fully realize this unique environment because of the broad spectrum of disciplines touched by its mission. For the

school, it will provide exciting new opportunities for collaboration, even among its existing faculty, who have been located in separate locations for the past three years. Along with the Informatics Research Institute's funded research projects located within the Informatics Complex, all of the synergies will be in place for true collaborations across the arts, sciences, and professions.

Bailey

The ultimate beneficiaries of these efforts will be our students. It is the cultivation of these students and the nurturing of their creativity that will prepare them for a lifetime of contribution in their chosen fields. We have great faculty, and great faculty attract top students. Our hope is that by continuing to provide the most talented faculty, a superb learning environment, and appropriate resources, we can help our students fully realize their potential.
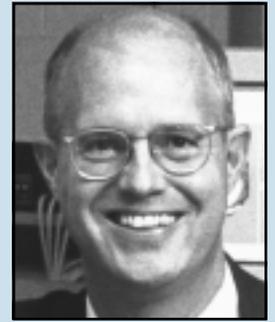
— *Darrell Bailey*

Clinton Jordan

Students help community, gain real-world experience

Little Red Door

Last fall, the Little Red Door Cancer Agency, an organization that works to reduce the physical, emotional, and financial burdens of cancer for medically underserved residents of central Indiana, was in need of improvements to its Web site.

John Aleshire, LRD director, and Craig Koven, LRD public relations, approached the School of Informatics' New Media Program at IUPUI. They met with faculty members Dan Baldwin and Durwin Talon to develop a project for students that would also serve to create a new Web presence for the agency.

Talon's Interactive Multimedia class and Baldwin's Online Document Development class met with LRD representatives to discuss the needs and vision for LRD. The students were then asked to create original designs for the Web site. The finished projects were presented to LRD in a realistic artist-to-client format, and the winning design was chosen.

The Online Document Development class then took on the task of changing the design into a working Web site. Again, the two representatives from LRD met with students periodically to discuss their needs and review the students' progress. At the end of the semester, students again presented their finished products for LDR to choose from. Though the choice was difficult, a winning Web site was selected and implemented.

Matthew Bell

Reflecting on the experience, Koven said, "Little Red Door's opportunity to collaborate with students from the School of Informatics at IUPUI was an experience that was fun and rewarding. As a local organization, we valued the opportunity to work with students from our own community whose combination of ideas and the latest technology has yielded a completely new Web site of which we're very proud."

Paladin Foundation

New Media Program students recently had the opportunity to team with the Paladin Foundation to develop a new and unique Web presence for the foundation. The mission of this philanthropic entity is to provide educational opportunities to deserving children of U.S. Army soldiers past and present.

Durwin Talon's Interactive Multimedia class and Dan Baldwin's Online Document Development class accepted the project with enthusiasm. The class designed the Web site and presented Paladin a choice of outstanding implementations.

According to Chris Lepp from the Paladin Foundation, "Your students have completely surpassed my expectations regarding the Web site redesign. I was blown away with the professional look and feel. … While the learning experience was invaluable to your students, the net result will be invaluable to our organization. It is a pleasure to work with a team that has a sincere desire to ensure their job is accomplished with high standards of excellence."

Indianapolis Convention and Visitors Association

Dan Baldwin's Interactive Media Applications classes in the fall and spring semesters partnered with the Indianapolis Convention and Visitors Association to create two interactive CD-ROMs.

Susie Townsend, director of sales and service for the ICVA, introduced each project to the students, explaining the purpose of each and the expectations for the finished product. Townsend then worked closely with all the students throughout the creative process, from reviewing storyboards through critiquing prototypes to the final presentation of the projects and selection of the winning CD-ROMs.

The project for the class during first semester was to promote Indianapolis to visitors and convention planners. Second-semester classes dealt with explaining the ICVA and the benefits of cultural tourism to the city and the state. Both classes worked in four-member teams and were responsible for all aspects of the creation of the CD-ROMs, including research, design, and production.

Townsend says, "Our original goal was to build relationships within the university, expose IUPUI students to the tourism industry, and get a useable product for us as a company. I feel all that was accomplished and more. As is evident in your class, all of the students had exceptional talent. This partnership has been a win-win for both of our organizations."

Informatics and new media:

Extending the reach of information technology through humanitarian service commitment

by Darrell Bailey and Susan Tennant

One of the great challenges in developing countries is accessing the Internet with reliable and sustained levels of service that benefit the population at large. Nowhere is the benefit of the Internet and its vast resources more widely felt than in education and health care, and, in particular, health and medical education. The School of Informatics — with its focus on the study of information technology in society — recognizes that bringing the benefit of technology to those in need depends on concerted efforts from many individuals and organizations to promote the effective use of technology to underserved populations.

> Operation Walk, a nonprofit entity, was founded in California and currently is a collaboration of three primary groups in Indiana, California, and Colorado.

This past spring, a team from the School of Informatics in Indianapolis traveled to Cuba to observe the use of technology and education in a health-care setting and to establish an ongoing presence with a humanitarian effort that has received acclaim for its success in transforming the lives of patients requiring radical surgical intervention. Operation Walk, a nonprofit entity, was founded in California and currently is a collaboration of three primary groups in Indiana, California, and Colorado. The humanitarian effort's mission is similar to Doctors without Borders and Operation Smile and offers free surgical treatment for arthritis and other debilitating bone and joint conditions to patients in developing countries. Previous efforts have been conducted in China, Cuba, Nicaragua, and Peru. This spring's Operation Walk — Cuba project was solely an Indiana effort, led by Dr. Merrill Ritter, head of the St. Francis Knee and Hip Surgery Center, and supported by a talented surgical team from Colorado, Indiana, Louisiana, Maryland, and South Carolina.

Supported not only by surgeons and professional medical volunteers, generous donations of knee and hip replacement joints were made by the Indiana medical device manufacturer Biomet Inc.; antibiotics and other pharmaceuticals were donated by Eli Lilly and Co.; surgical support equipment was provided by St. Francis Hospital; and other contributions were made by Advanced Therapy & Rehab LLC and Innomed Inc. Two advanced anesthesia units were donated by Women's Hospital. Air transportation for the team was donated by ATA Airlines Inc. as a part of its "Ambassadors for Children" global outreach. Also, Pathway Productions, a video production company located in Indianapolis, donated its time to videotape the mission and produce a documentary video for the Discovery Channel.

Within this context, School of Informatics faculty and research staff — Darrell Bailey, Skip Comer, and Susan Tennant — joined the 45-member Operation Walk surgical team, which included anesthesiologists, surgical-suite support personnel, infectious-disease specialists, recovery-room nurses, and physical therapists. The informatics team's purpose was both to study technology in this setting and to digitally archive surgical procedures, physician-patient interaction, and the physician's conference — translated into English and Spanish — that was held on the final day of the expedition. A total of 28 total knee- and hip-replacement procedures were performed during the five-day period. From those experiences, Professor Tennant and New Media Program graduate student Brian Miller are coordinating efforts to

establish a comprehensive Web presence for English- and Spanish-speaking orthopedic surgeons, physical therapists, and other health-care professionals that will provide information, educational resources, and documentation of this medical outreach. The effort was worthwhile on many levels. As Skip Comer observed, "This experience was life altering. Access to advanced medical care is taken for granted in the United States as opposed to that provided in Cuba. Most Americans receive treatment within a reasonable amount of time. However, the situation in Cuba, where medical care is free to its citizens, is also limited due to a lack of medical resources. It can take years before surgical treatment is scheduled."

A further benefit of the project has been the connection with the Internet2 application groups on orthopedic surgery, health sciences, and international relations. Mary Kratz, program manager of the Internet2 health sciences initiative, comments, "The efforts of the School of Informatics at Indiana University in developing partnerships with key health initiatives within the international community have been exemplary. Specifically, the Operation Walk project in Cuba has attracted the attention of our international relations efforts as well as within our orthopedic-surgery working group. We look forward to their continued involvement in Internet2's health sciences agenda."
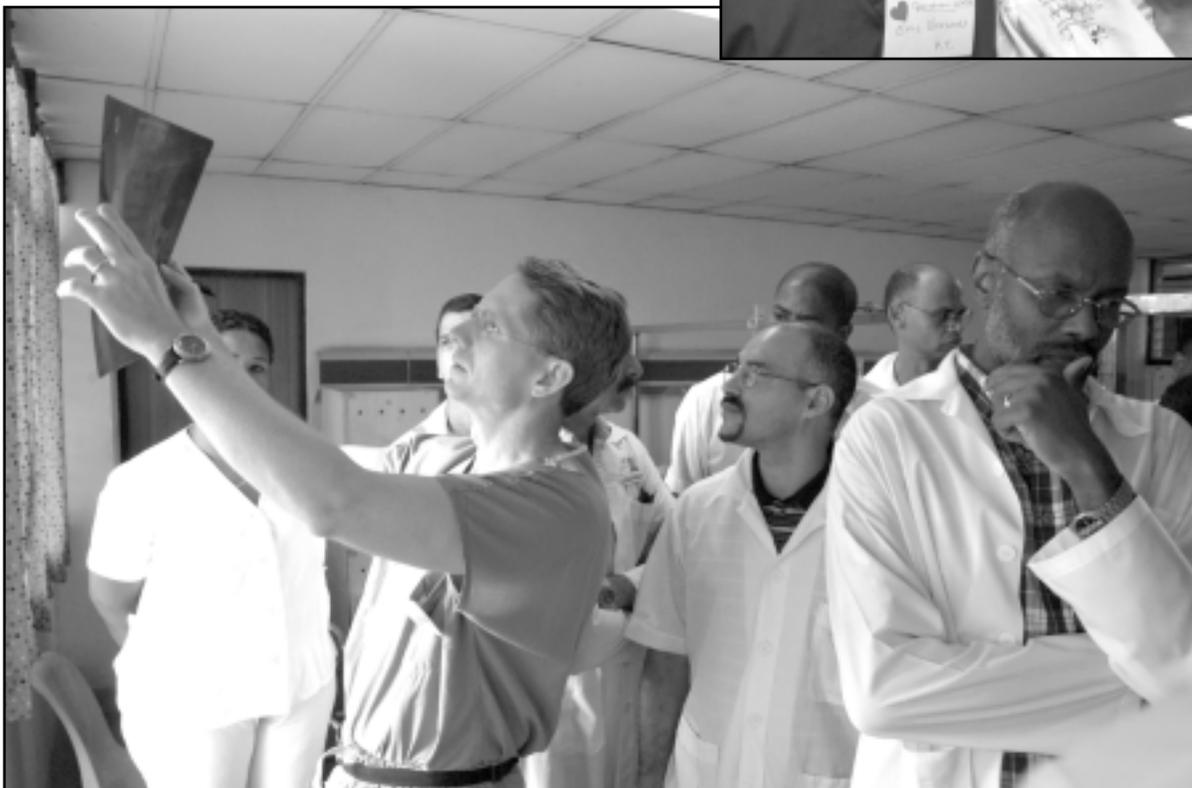
FAR LEFT: *Physician celebrates with patient after successful surgery.*

TOP: *Darrell Bailey (School of Informatics) thanks nurses.*

CENTER: *Physician talks with patient after successful surgery.*

LEFT: *Medical team members evaluate X-rays prior to surgery.*

PHOTOGRAPHY: *Robert S. Comer*

The Balancing Act

Nontraditional students develop formulas for success at IUPUI

As an urban university, IUPUI is committed to providing educational, economic, social, and cultural opportunities to a wide variety of students. Often described as nontraditional, many students at IUPUI spend their time in college much differently than those in a more traditional setting.

The three students profiled here are all new media majors, and while their approaches may vary, they have all found formulas for success in balancing work, home, and school.

Tom Brooks is an undergraduate student in the New Media Program at IUPUI. Working at the Indianapolis Motor Speedway the past three years, he has played an important role in the implementation of technology at the track. Brooks has developed the architecture and produced logos for the Motor Speedway's Internet and intranet secure Web site. He has developed server-side and client-side Web pages and created the live Internet Timing and Scoring Application in Macromedia Flash, which uses the Internet to display race results live during the races. As if that weren't enough, he attends all 16 of the Indianapolis Racing League's races, including the Indianapolis 500 and the Motegi in Japan.

In 1994, Brooks began looking for schools where he could complete a bachelor's degree. He had developed a broad range of interests, including working with and developing Internet programs. He took courses from Utah State University, Macon State College, Georgia Military College, and City of Chicago College in Saudi Arabia. Brooks still remembers calling from Prince Sultan Air Base in Saudi Arabia to learn more about the New Media Program at IUPUI. "I remember … thinking that this school had everything I had always wanted," Brooks said. "I have always been fascinated with life, looking for new challenges, and I wanted to express myself through a combination of my artistic and technological sides."

Brooks moved to Indiana from Georgia and began his journey towards a bachelor's degree in media arts and science. He has found in the School of Informatics one of the only schools in the country that offers the curricular diversity he had been searching for. The courses he has taken dealing with areas such as video production, 3-D modeling for CD-ROM and Internet interactivity, data storage and retrieval, interface design, graphic design, and Web development have been perfect for him. He has been able to apply the knowledge he has gained directly to his work at Cellnet Data Systems, VIFI, and in his current position with the Indianapolis Motor Speedway.

Brooks appreciates the program integration that allows students to complete course work from both the New Media and Computer Science programs. He has gained a great deal of practical knowledge in a very short time and has learned how to adapt to the ever-changing job market and how to present to and interact with a broad audience of clients. According to Brooks, the New Media Program prepares students for almost anything they will encounter in their careers.

When he is not working or attending classes, Brooks loves to spend time with his wife and children. He is often asked how he is able to attend school full time, work a full-time job — which includes traveling for about 20 weeks each year — and maintain a balance in his life. His reply is usually the same: "I love what I do, I love interacting with people, and I love learning new things using cutting-edge technology."

Mark Buell, a junior at IUPUI, is working toward a bachelor's degree in new media arts and science as a part-time student.

Since August 1987, Buell has been employed by US Airways, where he works full time as a flight attendant. His job permits him to work mostly weekends, which allows him to attend classes during the week. Although some of the flexibility in his work schedule was lost after the Sept. 11, 2001, terrorist attacks, Buell is still managing to maintain a balance, albeit sometimes a shaky one, between work and school.

Brooks   *Buell*   *Stalcup*

Ryan Knoop

In 1996, Buell made the decision to return to college. He began as an exploratory student in the University College Division. Early in his studies, he encountered an instructor in a CPT course with whom he related well. Through conversations with her, he discovered the School of Informatics and the New Media Program.

Buell has overcome several obstacles during his time at IUPUI, including frequent changes to his course schedule resulting from changes in his work schedule. However, Buell has become an expert in problem solving, a skill he exercises on a daily basis at US Airways. Undaunted by setbacks, he remains determined and optimistic.

Buell understands and appreciates the value of education and has a firm grasp on reality. He assesses the situation each semester and sets about accomplishing the task at hand. This matter-of-fact methodology has helped him do well in his studies and his work and still take time for those people and interests that are important to him.

Understanding that "real-world" experience is crucial in the study of any discipline, Buell would like to be able to participate in an internship and projects involving the business community as he finishes his degree. After graduation he hopes to work in some capacity as an information technology liaison for research and development.

Since high school, **Christine Stalcup** has been balancing work and academics. She is very committed to education, career, and home life. Stalcup began her undergraduate studies at Franklin College in 1998 as a secondary journalism education major. She transferred to IUPUI in 2000 to begin taking courses toward a degree in new media arts and science.

Stalcup considers herself lucky to have a job that relates directly to her new media courses. She is currently employed by Stewart Title Services of Indiana Inc., where she serves as a training and publications specialist. In that capacity she creates and produces all the printed and published marketing materials for a wide variety of corporate products and services and develops and maintains six corporate Web sites. Stalcup is also responsible for the training of more than 150 employees on all software and PC-related products, as well as monitoring and enforcing the corporate standard for associate training hours annually. In addition, Stalcup travels the state to provide backup PC support to more than 150 users. According to Stalcup, "All of the courses in the New Media Program have definitely provided the skills to help me succeed in my current position."

Maintaining the balance between work, home, and school is often difficult for Stalcup. Working long, sometimes unpredictable hours, often out of town, makes scheduling and attending classes challenging. She has been able to take advantage of online courses, which she finds helpful, and through patience and perseverance, she is planning to complete her bachelor's degree in May 2005.

Stalcup has been married for two years, and she and her husband are expecting their first child in the spring. Even though she realizes that her life will soon change dramatically, Stalcup is excited and is looking forward with great anticipation to the future. As she puts it, "Being a full-time career woman, wife, mother, and student is not easy by any means, but it is all worth it when you are proud of your life and your accomplishments."

A member of the Society of Professional Journalists and the International Quill and Scroll Society, Stalcup is also BrainBench-certified in desktop publishing design and is currently completing MCSE certification. Throughout high school and college, she has received multiple Journalism Education Association and National Scholastic Press Association Awards.

job hunting?

Visit the IU alumni online career center.

The Indiana University Alumni Association's online career center, launched on May 1, 2002, offers job searches, career guidance, and research services. It pulls job listings from more than 100,000 company job sites and provides more than 4 million job postings each day.

The site is at www.indiana.edu/~alumni/career/ and is available exclusively to members of the IU Alumni Association. Membership is open to all alumni and friends of IU. "For people looking for a job or considering a career change, the online career center in itself is worth the membership cost," said Ken Beckley, IUAA president and CEO.

The IUAA serves the university and its more than 450,000 living graduates through programs, services, and communications. One of the nation's largest alumni organizations, the IUAA strives to keep alumni engaged with their alma mater. For information, visit www.alumni.indiana.edu or call (800) 824-3044.

Annual Interface Symposium set for October

The Interface Symposium is slated for Oct. 10–11, 2003, at IUPUI. Sponsored by the School of Informatics' New Media Program, the annual event is a gathering of students, prospective students, parents, and community members interested in new media disciplines. The centerpiece of the event is an opportunity for participants to meet with notable industry professionals representing various new media disciplines. Participants also attend workshops, portfolio reviews, seminars, and panel discussions centered on innovations in special effects, conceptual illustration, and interactive design and animation.

Last April, more than 400 students and community members participated in the first Interface Symposium. The event was the creation of Associate Professor Durwin Talon and Assistant Professor Dan Baldwin. The Interface Symposium focuses primarily on digital storytelling, communication, and computer artistry.

Vision Fest to be held in April

Final plans are now being made for Vision Fest, an academic animation festival that will be held in April 2004. The festival will feature high-quality animated works of an international variety and a unique competition for applied animation in 2-D and 3-D animation, scientific visualization, motion graphics, sequential art, and conceptual and production design. The festival will be staged at IUPUI and sponsored by the New Media Program.

Students and faculty attend SIGGRAPH

Seven representatives, including faculty and students, from the School of Informatics' New Media Program attended the 30th SIGGRAPH International Conference July 27–31 in San Diego, Calif.

SIGGRAPH is a special-interests group of the Association for Computing Machinery, the world's first and largest computing society. Best known for its annual conference, SIGGRAPH is dedicated to the generation and dissemination of information on computer graphics and interactive techniques.

Conference activities included seminars for educators, presentations of papers and projects, art galleries, an animation festival, and the Guerilla Studio, an integrated network of machines where artists, scientists, and engineers can walk in, create, and immediately realize their creations.

Members of the Indianapolis community register for Interface events.

Gladden

Jeff Gladden's winning poster was displayed in the Student Art Gallery at SIGGRAPH.

Two of the attendees from IUPUI, **Jeff Gladden** and **Dan Baldwin**, were selected to present their work. Gladden, a sophomore in the New Media Program, is one of the winners of the Student Poster Competition and Exhibition. The theme for 2003 was "Geometric Patterns," and only about 10 percent of the digitally created submissions were selected for display in the Student Art Gallery. Following the 2003 convention, the exhibit will tour nationally and internationally for approximately one year with the traveling show conducted by the ACM SIGGRAPH Education Committee.

"Andy," an interactive narrative painting created by Assistant Professor Dan Baldwin, was chosen for presentation in the 2-D Gallery. Baldwin has combined the traditional medium of narrative painting with the use of technology, in this case a large flat LCS screen, which allows for viewer interaction with the painting. The viewer becomes the artist/storyteller and is able to transform the static story created by the original artist. In Baldwin's words, "Ultimately, the success of any narrative art form is the story and how it is conveyed. It is the goal of this work to create an experience, through collaboration and interactivity, where the story evolves into a more personal and meaningful event."

Assistant Professor Dan Baldwin's interactive narrative painting, "Andy," was displayed at the SIGGRAPH conference.

2003 MDL Excellence in Informatics Fellowship recipient announced

The School of Informatics is pleased to announce that the 2003 recipient of the MDL Excellence in Informatics Fellowship is **Jain Manojkumar Dhoka**. Dhoka will enter the chemical informatics graduate program at IUPUI in the fall 2003 semester. He holds a bachelor's degree in chemical engineering from the University of Mumbai, India, and a postgraduate diploma in information technology from IIIT, Bangalore. Dhoka is also pursuing a distance-learning course in bioinformatics from the Bioinformatics Institute of India, Noida. Since May 2001, he has been employed as a systems analyst at CrimsonLogic India, a Singapore-based IT consulting firm and application service provider.

The MDL Excellence in Informatics Fellowship is awarded annually by MDL Information Systems. The fellowship supports deserving graduate students specializing in chemical informatics or bioinformatics at Indiana University. "With its interdisciplinary emphasis on state-of-the-art information technology and applied science, the IU School of Informatics program is an excellent fit with MDL's academic outreach initiatives," said Phil McHale, vice president of corporate communications and scientific affairs at MDL. "We wish Jain Manojkumar Dhoka all the best in his studies."

David Brodowski

A dream is a wish your heart makes: Student interns at Disney

Amber Benedict's dream, to intern at Disney World, came true. A senior in the School of Informatics' New Media Program at IUPUI, Benedict is interning during the fall 2003 semester at Disney World in Orlando, Fla.

This opportunity didn't just appear. Benedict carefully researched the possibility of an internship at Disney and went through a rigorous application process. After attending a presentation by Disney representatives, completing the necessary paperwork, and surviving some nerve-racking interviews, she learned that she is among the lucky few.

Benedict had developed a strong interest in computer science in high school, and during her freshman year as an undergraduate student, she began to look for a related program. She soon discovered that the School of Informatics' New Media Program was the perfect fit for her unique interests and skills. Although she enjoys Web design and animation, Benedict's true areas of interest are video production and film editing.

She is working on her five-month internship and is hoping to be considered for an advanced internship at Disney World.

Mobility Competition declares winner

First-place honors in the Hewlett-Packard/UITS Mobility Competition at Indiana University's Kelley School of Business go to the student team consisting of Abeer Tebawi (business), Hing King So (business), **Megan Lewis** (informatics), and Bing Li (computer science).

The faculty who initiated the competition were Anne Massey and Ramesh Venkataraman from the Kelley School of Business. **Dennis Groth** (informatics) and Beth Plale (computer science) provided support.

The objective of the HP/UITS Mobility Competition was to provide students an opportunity to be exposed to the technical and business issues associated with mobile technology solutions. Over the course of the spring semester, students worked in self-directed, cross-disciplinary teams to develop a working prototype and business case for delivering aspects of IU's course management system — OnCourse — to wireless/mobile-access devices such as PDAs.

Integrated teams of four students from the Kelley School of Business's MSIS program, the College of Arts and Sciences' Department of Computer Science, the Master's in Immersive Mediated Environments Program, and the School of Informatics participated in the competition and associated course work through the sponsorship of University Information Technology Services and Hewlett-Packard, with facilities provided through the new graduate center's technology studio.

Technically, the teams were charged with developing the business logic necessary to design and develop an application (to run on an application server) that would access the OnCourse database and deliver content to a wireless PDA in the appropriate HTML format. From the business perspective, students were also charged with developing a business case (i.e., the

Daylight Innovation in Chemical Informatics Fellowship awarded

The School of Informatics and Daylight Chemical Information Systems Inc. are pleased to announce that the 2003 Daylight Innovation in Chemical Informatics Fellowship has been awarded to **Jianyong Zhu**. Zhu joined the School of Informatics in August as a first-year graduate student in chemical informatics at IUB.

Chemical informatics is the application of information technology to the investigation of chemistry problems and to the organization and analysis of chemical data. The key areas of concern to chemical informaticists are systems that can not only cope with huge amounts of data, but also can organize and evaluate data to give new insight for further chemical research.

Zhu received his bachelor's and master's degrees in computer science at Franklin University in Ohio. In 1996, he was awarded an undergraduate degree in fine chemical engineering, with a minor in computer science, at Qingdao Institute of Chemical Technology, Qingdao, China. Prior to coming to the United States, he held increasingly responsible positions at Rhein Chemie, a Bayer subsidiary, rising to laboratory supervisor in just four years.

"Daylight continues to look to the future to anticipate and deliver the possibilities for informatics in tomorrow's world," said Yosi Taitz, co-founder and CEO of Daylight Chemical Information Systems Inc. "We are pleased to support Jianyong Zhu's interest in being part of that future."

"We couldn't be more pleased than to have Jianyong Zhu accept the Daylight Innovation in Chemical Informatics Fellowship and enter our program," agreed Mike Dunn, dean of the School of Informatics. "Daylight's support of our outstanding graduate students is key to building the excellence of our chemical informatics programs." (Read about ChemInfo at IU on page 15.)

Daylight Chemical Information Systems Inc. is the leading chemical informatics innovator in the life-science industries. Daylight's current product lines are developed for two key market sectors: scientific research and corporate information systems. Daylight's systems use chemical structure as the primary key for storage and retrieval of data and are designed and built to robustly handle the entire world's chemical information. Daylight Chemical Information Systems Inc. is a privately held company with corporate offices in Mission Viejo, Calif., and research offices in Santa Fe, N.M., and in Cambridge, England. For more information visit www.daylight.com.

arguments for why — or why not — UITS should pursue efforts to enable Mobile OnCourse). The teams' projects were judged by representatives from IU and Hewlett-Packard, as well as faculty who have been overseeing the course on the following criteria: business case, design document (rationale for Mobile OnCourse system design), prototype evaluation, and presentation.

At the awards banquet following the competition on April 18, all participants received certificates, while members of the top three teams also received plaques and a total of $9,000 in monetary awards.

First IU health informatics student working to improve patient care

Richie Pfeiffer was the first student admitted to the health informatics master's degree program at IUPUI when it began in 2001. Prior to beginning his studies in health informatics, Pfeiffer graduated from Indiana University with a bachelor of science in nuclear medicine technology in 1997. As an undergraduate student, he participated in Positron Emission Tomography research and became board-certified with distinction in 1997. He plans to finish his master's degree in May 2004.

Pfeiffer has worked as a staff nuclear medicine technologist at Richard L. Roudebush VA Medical Center and as an instructor for clinical and didactic training for the IU Nuclear Medicine Technology Program. Currently, he is the lead technologist and Picture Archiving and Communication System administrator at the north campus of the Community Health Network. Pfeiffer has been involved with the implementation of the Radiology Information Systems and re-engineering of the nuclear medicine department protocols, workflow process, and procedures. He also helped to implement the PACS and filmless environment for the Indiana Heart Hospital, the world's first all-digital heart hospital. He has been instrumental in the development of new workflow and integration to achieve optimal patient care.

Pfeiffer's main experience has been as liaison from the IT environment to radiology and vice versa. He has also attended the Rewards Institute, which is a collaborative educational program of Indiana University Radiology Associates in affiliation with GE Medical Systems. The purpose of the institute is to teach radiology professionals the role of PACS and how to implement and manage a successful PACS system in a filmless radiology environment. One of his goals is to implement the PACS environment enterprise-wide within Community Health Network.

In his work, Pfeiffer has experienced firsthand the surge of information accomplished through computer technology. Working in image processing, he has been involved in the implementation of many new procedures used to manipulate and process images to achieve higher quality for improved analysis. He prefers the hospital setting to other types of health-care facilities because he feels that he can be most effective in improving the processes of patient care in this environment.

Pfeiffer's decision to pursue a master's in health informatics was prompted by his fascination with technology and a curriculum that integrates the disciplines of computer science and health sciences. By continuing his education, he hopes to broaden his knowledge base and learn fundamentals that he can apply to various disciplines in the health-care industry.

Pfeiffer appreciates the functional, practical information he is receiving in his classes and has enjoyed the flexibility of the health informatics program, which has allowed him to tailor his course work to meet his specific goals.

David Ewers

Health Information Administration Program announces endowment for directorship

The Health Information Administration Program has established an endowment for the directorship of the HIA program. The McKenzie Ashton Director of Health Information Administration honors two former program directors, Mary McKenzie and Janatha Ashton.

Mary L. McKenzie began her career as a faculty member for the Indiana University's Medical Records Administration Program (now the Health Information Administration Program) and, beginning in 1967, served as its program director for 29 years.

Numerous innovative contributions to the program are attributable to Professor McKenzie. Under her leadership, clinical education in nontraditional practice settings was instituted, several scholarships were created, and program graduates consistently participated in the national Registered Health Information Administration certification exam, achieving scores well above the national average.

During her tenure at Indiana University, McKenzie served for one year as the president of the American Health Information Management Association.

The Mary L. McKenzie Scholarship was created in her honor upon her retirement in 1996. The scholarship is funded by contributions from HIA alumni and is awarded annually to a student in the HIA professional program.

Ashton became a faculty member of Medical Records Administration Program in 1969. She was named assistant professor in the program in 1978, associate professor in 1995, and acting director in 1996.

Ashton has authored educational resource materials on the subject of medical coding instruction and has conducted workshops throughout the country dealing with health-care personnel. In 1985, she was

HIA Program directors past and present unite: Jan Ashton, left, Danita Forgey (current HIA Program director), and Mary McKenzie.

recognized by the Indiana Health Information Management Association, who presented her with their Distinguished Member Award for her dedication to teaching and the health information management profession. She was also the recipient of the HIA program's first Elton T. Ridley Service Award and the Indiana University Trustees' Excellence in Teaching Award.

Ashton retired from Indiana University in 2000; however, she continues to be actively involved with the HIA program as an advisory board member, advocate, generous supporter, and valued resource. In 2003, Ashton was honored with IUPUI's Spirit of Philanthropy award for her volunteer activities on behalf of the HIA program and the School of Informatics.

School of Informatics Honor Roll of Donors

3M Corp.
William A. Adams
Advanced Chemistry
    Development Inc.
Bryan T. Allen
Rachel S. Alma
Robert and Dorothy Anderson
V. Renee Appel
Don and Lucy Aquilano
J.L. Arbogast
Janatha R. Ashton
Mark A. Atchison
John and Anne Atherton
Kathleen and William Babchuk
Darrell L. Bailey
Sandra and John Bailey
Marcia R. Bailey
Tina M. Bakowski
Daniel L. Baldwin
Charlotte D. Barrett
Kay Bauer
Baxter International Inc.
Londa R. Bechert
Susan and Robert Beckett
Cynthia A. Bennett
Nancy E. Bensen
Lisa and Mark Beretta
Richard E. Best
Nancy and Timothy Blackburn
Sally and Michael Breen
Vickie S. Bridge
Melanie and Jacob Brim
Deborah S. Brown
Jo A. Bruce
James and Rebecca Buher
Pamela S. Burns
Linda Burzlaff
Lisa A. Butt
Susan E. Carmichael
Kathryn and William Carmichael
John and Anita Cauffman
Chandler Systems Inc.
Chung K. Chang
Sally A. Cipperly
David and Julie Clark
Kimberly and Christopher Clodfelter
Maria Zarceno Coggins
Elizabeth and Charles Colligan
Robert S. Comer
Computer Associates International
Krisa M. Cooper
William and Kathleen Craig
Barbara and Kenneth Crawford
Roland S. Dale
Franklin J. Daniel
Kathy L. Dardeen
Daylight Chemical Information
    Systems Inc.
Brian A. De Kemper
Karen DeBondt
Robert B. Demaree
Doctors Office Consulting Inc.
Edward M. Downs
Diane and Michael Drozd
Karen and William Drury
Tommi Dukes and James McDonald
Roy and Hortense Dunbar
J. Michael and Sarah J. Dunn
R. Kent Dybvig
Alice and Andy Dzenitis
Gina Del Santo and Stuart F. Easley
Rebecca and Michael Eckerle

Debra and Allen Edgerley
Dianna and Michael Eggiman
Frances C. Ekstam
Mary A. Elam
Eli Lilly and Co.
Sean E. Ellis
Barbara A. Ellison
Joan and Michael Engels
Charlotte Reddick Fabian
Anthony and Lynda Faiola
Laura and Ward Feste
Fidelity Investments Charitable
    Gift Fund
Gloria and Tom Fitzsimmons
Margaret and Gary Ford
Danita and Robert Forgey
Lisa R. Francis
Nancy S. Friddle
GTM Consultants Inc.
Suzanne and James Gallai
Donna F. Gannaway
Mary and George Gargiulo
Robin Ellis and Robert A. Gates
William J. Gaughan
Gazelle TechVentures Inc.
Deborah S. Gembala
Patricia A. Gerrie
John and Diane Gibbs
Larry and Katharine Gigerich
Sheryl J. Gillmann
Clifford and Deborah Goodwin
Jill Goodwin
Martha L. Graves
Stanley J. Hall
Tanya M. Hall
Tia M. Hamilton
Sally A. Hardgrove and J. Ronald
    Newlin
Barbara Harkleroad
Nicholas D. Harpe
Cynthia L. Harris and Robert C.
    Gallee
Diane Hasler
Donald and Karen Hawes
Karen G. Hayden
Mark C. Healey
Janice and Samuel Hecht
Marcea Hefner
Dennis and Joy Heller
Rebecca A. Hensley
Hershey Foods
Marijane Hession
Elizabeth and Frank B. Hiestand
Janni K. Hill
Mark Hill and Karen Baker Hill
Hirons & Co.
Sadia L. Hodgkin
Hoosier Filing & Storage
Jeff A. Hostetler
Mary and Steven Hott
Donald J. Huckleberry
Michael S. Hunsaker
Linda A. Hyde
Indiana Health Information
    Management Association
Illinois Tool Works Foundation
Dianne M. Issen
Lawrence S. Jackowiak
Christa L. Jackson
Julie Jesse
JoAnne Bruce & Associates Inc.
Patricia M. Johnson

Robin and Larry Johnson
Josette and Kevin Jones
Patricia Kelly Jones
William L. Karwoski
Sharon K. Kemerly
Elizabeth A. Kershner
JoAnne M. Kerwin
Linda and Mark Kiger
Renee C. Kilbane
Sun Kim
Daleann and Ora Kincaid
Velma E. King
Clinton T. Koch
Joy and Stephen Koors
Madonna and Paul Kruse
Judith L. Kuhn
LabVantage Corp.
LabWare USA
Jane Lach
Matthew S. LaMaster
Sarah and Thomas Lasbury
Erica and Michael Leeds
Charlotte and Gerald Lefert
Karen E. Lehman
Carol A. Lewis
Randall H. Lipps
Tedi Lojewski
Keoambi V. Lumpkin
Deborah R. Lynch
Steven and Wendy Mannheimer
Richard Martin and Jane Lewis
Judith Matthews
Judith A. McCoy
W. Mark McCreary
Dick and Donna McGarvey
Mary and Leon R. McKenzie
MDL Information Systems
Medical Coding Services LLC
Med-Rec Systems Inc.
Jill and M.P. Meisenheimer
Kimberly K. Melluck
Microsoft
Mary A. Michau
Barbara J. Miller
Deborah D. Miller
Leslie and Patricia Miller
Margaret and Devon Miller
Nicole M. Mineo
Mitsubishi Electronic Research Labs
Sherry and William Monachino
Marlene H. Moore
Carl and Charlotte F. Muegge
Mystic Journey Productions Inc.
Cheryl and Lawrence Nicholson
Linda and Gary Nugent
Janet Obenchain
Karen R. O'Lessker
Mary K. O'Neill
Sharon and Brad O'Neill
OpenEye Scientific Software
JoAnne Marie Otoole
Catherine A. Palmer
Douglas G. Perry
Narayanan and Manju Perumal
Anne L. Peterson
Beverly D. Phillabaum
Amy R. Phillips
Sally D. Phillips
Pitney Bowes
Michael L. Polich
Trudyanna and Edward Pursell
Ann Quinlan

Susan and Frank Quinn
Michael Rafalski
Elizabeth and Michael Ramsey
David M. Ratts
Dale Ray
Mary E. Reed
Carolyn Richards
Mary E. and Elton T. Ridley
Lynn Rihn
Sharon A. Rippe
Edward and Claire Robertson
Vickie L. Rogers
Molly Rondeau
Suzanne and Donald Rosborough
Ann and William Rugg
Mary and Dan Rumbach
Nancy S. Salstrom
Nancy and Joseph Sanchez
Nancy and Larry Sayre
Scientific Software Inc.
Donna and Ray Scott
Suzanne and Peter Scott
Lori K. Sears
Leslie A. Shaffer
Laura L. Shannon
Vernon and Christine Shepherd
Martin A. Siegel
Silicon Graphics Inc.
Mary A. Sitler
Benjamin A. Slota
Nancy and Laurence Smack
William P. Smythe
Southwestern Indiana Health
    Information Management
    Association
Cynthia A. Spann
Marilyn S. Sparks
Eileen and Michael Speranza
Durwin and Karen Talon
Telamon Corp.
Tenet Healthcare Foundation
Susan and Phillip Tennant
Karen and Mark Tevault
Tinwisle Corp.
Betty and James Tower
Douglas A. Tresslar
Vera Turner
Carol E. Twedt
Bernice and Lawrence Ulrich
Donna and Thomas Upton
VanAusdall & Farrar Inc.
Naveen S. Vinukonda
Ruth A. Walker
Ying Wang
Diane Ward
Lynda and David Webb
Saragale Weinstock
Michael F. Weisbard
Arija and Merrill Wesemann
Gary and Mia Wiggins
Mary E. Williamson
Kathy J. Wilmoth
Donna M. Wilson
Patricia and James Wilson
Linda A. Wineinger
Linda G. Wolfe
Linda S. Wolfe
Ronald A. Wolfe
Clara S. Womack
Word System Inc.
Jon W. Ziemer

New media graduate exploring possibilities

"Any sufficiently advanced technology is indistinguishable from magic."

— Arthur C. Clarke

"There were days when I felt like I was learning magic," said **Barbara Hayes**, recent graduate and now adjunct faculty for the School of Informatics. "Everything was new and amazing — the possibilities were (and still are) endless. Plus, it helps to be a bit of magician if you are trying to stay current in two fields: informatics and my own industry, health care."

Hayes is typical of many adult students who tap the resources of the School of Informatics to enhance their existing job skills. "I could see health care changing all around me — the push for better data, for electronic medical records, for improved patient safety and new avenues of patient education. Every day, we are challenged to find more efficient, effective ways to help patients. It was clear to me that good digital tools and good digital design would be a major part of meeting that challenge."

Hayes is senior consultant at the St. Vincent Stress Centers in Indianapolis. She has a master's in social work and a long-standing interest in the psychological consequences of medical and surgical illness. She returned for her second master's degree, this time in new media, to explore new methods of delivering health care and education across geographical distance.

"At the time, I was involved in helping primary care physicians integrate medical and psychological care," she said. "We had physician offices scattered all over central Indiana. I needed new, inexpensive ways to assist them. For example, most of our physicians saw a need for parenting classes and parenting information. I could not afford to send a family therapist to each office, but I could videotape a series of parenting classes and deliver them via the Internet. The degree program helped me explore a wonderful range of new possibilities."

Post graduation, Hayes's new informatics skills were key to a Web-based kiosk for the St. Vincent Intensive Care Unit. "We wanted to help the families of patients in our ICU. Patients in the ICU are often unconscious and hospitalized for weeks at a time. There may be several doctors and nurses involved in the care of any particular patient. All of those professionals are busy and needed at the bedside. But the families, in the waiting rooms, need to understand what's happening. They also have to learn how to take care of themselves during an extremely stressful experience," Hayes said.

The result was an interactive "toolbox" for the ICU waiting rooms, designed to help families with the practical, psychological, and spiritual challenges presented by an ICU hospitalization. Hayes assembled a design team that included ICU administrators, nurses, social workers, chaplains, writers, graphic artists, programmers, and hardware specialists. Each member of the team could recount a personal experience in an ICU. All contributed to the vision.

"That's the way it ought to be," Hayes said. "The end users, be they workers or consumers, must be involved in product design. We interviewed intensive-care unit staff members about their needs and workflow. We listened to families describing their questions and concerns. We let all of them guide the process." The program was built in templates that can easily be adapted to other intensive-care unit settings.

Hayes

Hayes is now an instructor in the School of Informatics. "Teaching is a great way to keep your skills current. Plus, the best part is, I was given what I consider to be the most interesting course to teach in the curriculum: Social Informatics," she said.

Social Informatics is an undergraduate requirement. "The definition I use in class comes from Dr. Rob Kling," Hayes said. Kling, an international leader in the discipline, died unexpectedly this year. He was the director of the Center for Social Informatics in SLIS at Indiana University. Kling defined social informatics as the "… interdisciplinary study of the design, uses, and consequences of information technologies that takes into account their interaction with institutional and cultural boundaries."

Most students entering the course have no idea what they are going to explore. By the time they leave, they've touched on a wide range of subjects affected

Tom Criss

by informatics: privacy, law, crime, access, education, ethics, organizational behavior, and innovation. "We look at how all the major industries are being transformed. We examine the effects of technology on workers and consumers of each industry — the good and the bad. We try to explore the realities and myths that cluster around informatics technology," Hayes said.

Hayes also tries to get students thinking about their future in the work force. "My message to students is this: Geeks are replaceable, eggheads are not," she quipped.

"Critical thinking and analytical skills are essential in a field that has seen extreme highs and extreme lows in a such a short period of time. We've gone from an unrealistic kind of 'techno-enthusiasm' to a cynical 'techno-phobia' in about three years. I think both stances are reactionary and unproductive," Hayes said.

"Whether we make money or not, technology will alter the way we work, play, and live our lives. Those changes will be positive in direct relation to the thought we put into them. We have seen predictions that 'going digital' will flatten organizations, globalize society, decentralize control, and undermine hierarchies. The question we must ask is, 'Is any of that true? And if so, do we want it to be that way?'" she said.

Health care offers some pointed examples of the positive and negative potential in digital tools. "As the major medical institutions mine the databases they began building in the '90s, we will learn much more about the interrelationships of diseases and their various treatments. But we may also destroy all vestiges of patient privacy in that act of exploration," Hayes said. "We have to think about the social consequences of our actions. Too often in informatics we have done things because we could, not because we should. … Too often in health care, we have put off doing anything because we fear doing the wrong thing."

Hayes is married to a physician who works at Eli Lilly and Co. "My husband's industry is also being transformed by technology. Software advances are helping Lilly sort through millions of compounds for their possible medicinal uses. We talk all the time about the way chemical informatics, laboratory informatics, the human genome project, and other technology-intensive fields are impacting the pharmaceutical industry," she said.

The couple has three children, two grown and one still at home. "The youngest thinks it's 'neat' that mom messes around with computers. I just hope that knowing a little will help me keep up in the world she'll be living in," Hayes said.

Clinton Jordan

Future looks bright for Box Multimedia

Two new media graduates join forces to create a new business

Nick Box began as a physics major at IUPUI. Two years ago, when he changed his course of study to new media, he would never have dreamed that today he and business partner **Josh Esslinger** would have created and developed their own company, Box Multimedia.

Joshua T. Esslinger BOX multimedia Nicholas C. Box

The company has had its ups and downs in its first six months of existence. However, it has also had many successes and, according to Box, "has a very promising future." The ultimate goal of the venture is to provide all-in-one digital marketing solutions for companies throughout Indiana by offering services in video production, Web site design, print design, and interactive media.

Much of the initial growth and success of Box Multimedia can be attributed to a New Media Program class project last year. Box and Esslinger worked with a team of two other students, **Shondelle Edmonds** and **David Reed**, to create an interactive CD-ROM for the Indianapolis Convention and Visitors Association. Because of the success of that project, the two were given an opportunity to produce a video that was shown during the ICVA's Rose Awards ceremony last spring. Since then, the business has been growing by leaps and bounds, mainly through word-of-mouth advertising.

Box Multimedia has recently formed an exciting partnership with the City of Music, an organization that promotes national talents in music and the arts and produces a weekly syndicated radio show. The company is also involved in several video and Web site projects and is in the process of redesigning its own Web site, www.boxmultimedia.com. Box is very excited about the release of a new compact disc by Ann McWilliams, for which he designed the graphics and enhanced CD. The completed product will be available soon at www.wrappedaroundit.com.

"I can honestly say that changing to the School of Informatics New Media Program has been one of the most exciting and beneficial moves I have made," Box said. "It has provided me with great opportunities … and an unbelievable jump-start toward the future. I want to extend my gratitude to the wonderful faculty and look forward to a continued relationship between the School of Informatics at IUPUI and Box Multimedia."

Josh Esslinger graduated in May, while Nick Box received his diploma in August. Both earned the bachelor of science degree in new media arts and science from the School of Informatics at IUPUI. 💻

Stay connected to IU with membership in your Alumni Association

Membership supports:

• *Programs that provide scholarships*

• *Commencement ceremonies*

• *Student recruiting and student organizations*

Enjoy member benefits:

• *IU alumni online directory*

• *Alumni online career center*

• *Indiana Alumni Magazine*

• *Network of 100 alumni clubs worldwide*

• *26 school and campus alumni associations*

www.alumni.indiana.edu
phone: (800) 824-3044
fax: (812) 855-8266
e-mail: iualumni@indiana.edu

INDIANA UNIVERSITY ALUMNI ASSOCIATION
CONNECTING ALUMNI. SERVING IU.

Vision

Informatics studies the application of information technology to the arts, sciences, and professions, and its use in organizations and in society at large. The Indiana University School of Informatics has set as its goal to be nationally recognized as the foremost in the country for excellence and leadership in informatics programs, including undergraduate and graduate education, research, placement, and outreach.

Mission

We believe there is great need and opportunity for professionals trained in state-of-the-art information technology and science with an emphasis on creative human applications. There is an urgent need in our society for graduates with education and experience in informatics, particularly with interdisciplinary skills. The School of Informatics will be foremost in the country to graduate professionals with formal preparation in information technology with subject area expertise. To this end, we will:

• Lead the nation in the development of an innovative and successful new curriculum for information technology and its applications;

• Educate students, including those who might not traditionally consider an educational path in technology, especially women and minorities;

• Encourage interdisciplinary research projects in the field of Informatics, focusing on distributed systems technology, information theory and information management, human factors and Human-Computer Interaction, and study of the social impacts of information technology;

• Serve the state of Indiana by way of education, community participation, and collaborative research partnerships, thereby participating in the growth of an IT culture in the state and encouraging continued economic development;

• Produce graduates who become leaders in the growing information economy of Indiana and the world; and

• Develop synergistic relationships with industry to develop and advance research in information technology and its applications.

- ✂

What's new with you?

The IU Alumni Association is charged with maintaining records for all IU alumni. Please print as much of the following information as you wish. Its purpose, in addition to providing us with your class note, is to keep IU's alumni records accurate and up to date. To verify and update your information online, visit our online alumni directory at www.alumni.indiana.edu/directory.

Publication carrying this form: **_Informatics magazine_**   Date _____

Name _____

Preferred Name _____

Last name while at IU _____ IU Degree(s)/Year(s) _____

Soc. Sec. # or Student ID # _____

Home address _____ Phone _____

City _____ State _____ Zip _____

Business title _____ Company/Institution _____

Company address _____ Phone _____

City _____ State _____ Zip _____

*E-mail _____ *Home page URL _____

*Please indicate clearly upper and lower case.

Mailing address preference: ❍ Home   ❍ Business

Spouse name _____ Last name while at IU _____

IU Degree(s)/Year(s) _____

Your news: _____

_____

_____

_____

_____

❍ **Please send me information about IU Alumni Association programs, services, and communications.**

Please mail to IUAA, DeVault Alumni Center, 1000 E. 17th St., Bloomington, IN 47408, or fax to (812) 855-8266.

Informatics alumni write in with news

Rajan Arora, BS'03, informatics, minored in entrepreneurship and carried a business cognate. She wrote to us from Indianapolis.

Penny Bennett, BS'87, HIA, recently accepted the position of director of health information management at Wishard Health Services.

Kyle Evers, BS'02, media arts and science, works for Business Cards of Tomorrow in Indianapolis.

Victor Figlin, BS'02, media arts and science, is the art director at Jasneek Medical Staffing in Indianapolis.

Jordan Gilman, BS'03, informatics, has landed a job in Benton Harbor, Mich., with Whirlpool Corp. He's working as a business analyst for the company.

Nick Harpe, BS'02, informatics, contacted us from Lexington, Ky., where he is now a LAN administrator for the Kentucky League of Cities, a nonprofit organization that provides IT services, communications, insurance, lobbying, training, legal services, and financial services to local governments throughout the state of Kentucky. In this way, the league advances the capabilities of municipal governments as they work with state and federal agencies on a wide range of issues. Says Harpe, "It is great being part of such a successful nonprofit, because it gives me the flexibility to play and experiment with a lot of new technology that I wouldn't be able to touch in a lot of places in the private sector."

Amber Hiscock, BS'99, HIA, recently accepted a position as business systems analyst for Community Hospital's business solutions department.

Matt LaMaster, BS'01, informatics, e-mailed to say he hasn't fallen off the face of the earth. "Well, maybe I have," he joked, "I'm back in Iowa!" LaMaster has been regaling correspondents with his adventures in South Africa, where he is on tour providing consulting services for Pioneer Hybrid. His next trip will be to Guadalajara, Mexico.

Erica Leeds, BS'90, HIA, accepted a new position at Wishard Health Services as data integrity applications analyst.

Linyong Mao, MS'02, chemical informatics, is working at Pacific Northwest National Laboratory as a postdoctoral fellow in the computational biology, biochemistry, and biophysics group. He is currently involved with a project that deals with the simulation of biological networks.

Mike Muldoon, BS'99, media arts and science, is coordinator of computer applications for Florida State University Housing. In a recent e-mail to us Mike said, "In addition to running two computer labs, I also maintain three databases and a Web site and work on the designs of special presentation projects. My education from IUPUI and the School of Informatics's New Media Program has been indispensable."

Vijay Naranamasamy, MS'03, bioinformatics, is now working at Bioinformatics Research Center, Medical College of Wisconsin.

Sherry O'Neill, BS'76, HIA, received the IHIMA Professional Achievement Award.

In Park, BS'02, media arts and science, has returned to Seoul, South Korea, and is working in e-mail marketing and advertising for Lotte.com Inc.

Haifeng Zhao, MS'03, bioinformatics, is living and working in San Diego.

Sihui "Bruce" Zhao, MS'03, bioinformatics, is pursuing a PhD in bioinformatics at North Carolina State University.

Jim Fore

Ryan Stone

We want to hear from you — fill out the coupon on page 36 today!

worldwide network

INDIANA UNIVERSITY ALUMNI ASSOCIATION

Virgil T. DeVault Alumni Center
1000 East 17th Street
Bloomington, Indiana 47408-1521