INDIANA
informatics

SUPERCOMPUTING!

CALLING ON THE HEROES OF THE MODERN DATA EXPLOSION [p. 8]

SCHOOL OF INFORMATICS
INDIANA UNIVERSITY

in this issue

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SUPERCOMPUTING!

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2011 Award Winners

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Pioneering the future of Informatics

The frequent references to cyberinfrastructure in this issue's cover story demonstrate a characteristic situation in computing and informatics – a booming area described by a word that didn't even exist 15 years ago. With slightly varying timescales, the same could be said about many other parts of informatics and computing such as bioinformatics, social networking, mobile computing, wearable computing and many more.

These comments illustrate a broader truth about the computing field – it evolves at a speed unmatched by any other in academia. Starting from its roots in computer science, the academic field of computing and informatics field is roughly a half century old. The first computer science degree program in the United States was formed right here in Indiana, at Purdue University, in 1962. Since then the field has grown in a way that can be thought of as three concentric tree rings, encompassing three generations of evolution. To understand the IU School of Informatics, it is useful to understand these rings.

The innermost circle can be referred to as computing foundations. These can be thought of as the areas related to the components that comprise any computer and allow it to be used: operating systems, compilers, programming languages, computer networks and the foundational theoretical topics such as analysis of algorithms. Early in the history of the field the majority of the work was in these areas; they remain important but now occupy a smaller portion of the whole field.

The middle circle consists of general purpose applications of or support for computing. Computer graphics is a good example – it is extremely important is a wide range of applications and by now is ubiquitous in many commonly used tools. Many of the best known parts of computing and informatics occupy this ring, including artificial intelligence, computer security, computer vision, databases, human computer interaction, machine learning, robotics, scientific computing, software

engineering and more. People doing this type of research often deal with applications in other fields but their primary focus generally is within computing and informatics.

The outermost ring (for now!) is populated by discipline-specific applications of computing. The "X-informatics" fields – bioinformatics, cheminformatics, health informatics, legal informatics, music informatics, social informatics and more – are the primary occupants of this ring. These areas are characterized by drawing heavily both from the particular application area (e.g. biology) and from techniques in computing, so that people working in them need to have a foot in each world.

DEAN ROBERT B. SCHNABEL

> ## "THE STRONG REPRESENTATION OF FACULTY AND PROGRAMS OF STUDY ENCOMPASSING ALL THREE RINGS IS WHAT DISTINGUISHES THE IU SCHOOL OF INFORMATICS."

The strong representation of faculty and programs of study encompassing all three rings is what characterizes and distinguishes the IU School of Informatics. Part of what makes our school so exciting is the interplay between all of these areas; another part is the certainty that the field will continue to evolve quickly, and that we will evolve with it.

And interestingly, when I did a little online research to check the age of the word "cyberinfrastructure," the first link that appeared in the search engine (another concept that didn't exist not too long ago) was written by six authors from Indiana University, two from our school and four from IU's outstanding Information Technology services organization.

Bobby

Photo courtesy of Indiana University
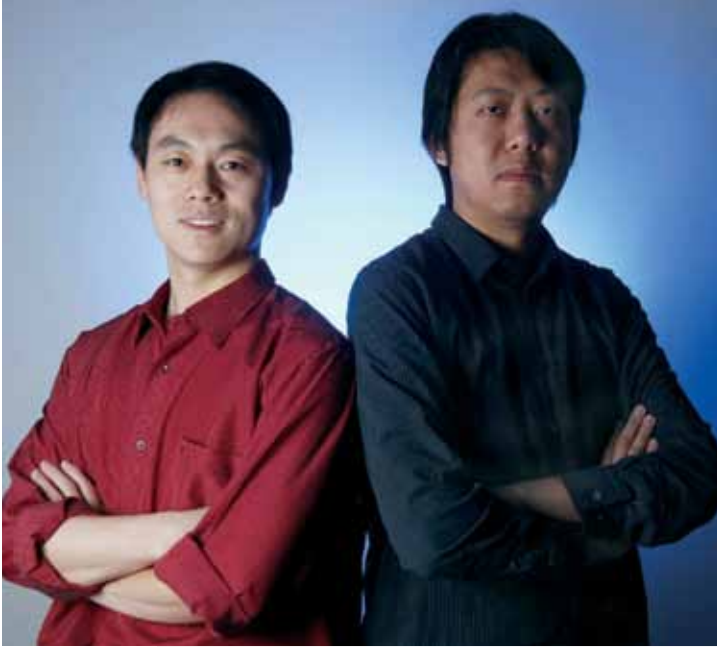
Doctoral students Rui Wang (left) and Zhou Li (right) were recently recognized by Facebook after uncovering a security vulnerabillity.

Two IUB students uncover Facebook vulnerability
Wang, Li recognized by company

Bloomington doctoral students Rui Wang and Zhou Li recently discovered a security vulnerability on Facebook that allowed malicious websites to uncover a visitor's real name, access their private data and post bogus content on their behalf.

Wang and Li said the vulnerability occurred when a user informed Facebook of his or her willingness to share information with popular websites like ESPN.com or YouTube. Whenever a website makes such a request to Facebook via the user's browser, Facebook passes a secret random string called an authentication token back to the requestor for identification. Whoever holds that authentication token can convince Facebook that they are, say, ESPN.com and then gain easy access to the shared data. Facebook confirmed the discovery and quickly remedied the problem.

"Researchers at Indiana University reported a vulnerability in our Platform code to us, and we worked quickly with them to resolve it. It was fixed shortly after it was reported. We're not aware of any cases in which it was used maliciously," officials at Facebook said. "We thank the researchers at Indiana University for bringing this to our attention, and for demonstrating the value of responsible disclosure."

First Krane Scholarship benefits Informatics junior

Junior informatics major Sam Parsons has been named the first recipient of the newly created Krane Scholars Award, an award recognizing an outstanding student in the Bloomington School of Informatics and Computing or the School of Journalism.

The award, established by School of Journalism alumnus and School of Informatics Dean's Advisory Council member David Krane, has been designed to benefit both schools. Every other year, the recipient of the scholarship will come from the School of Informatics and Computing. With this gift of $25,000, Krane hopes to encourage the merging of journalism/media with information technology, and reward students who are blending the two fields.

Students who apply for the award will propose a project that uses or combines journalism, media, or information technology concepts, with the winner being selected by a committee comprising a mix of School of Informatics and Computing and School of Journalism representatives.

David Krane is a corporate communications and technology marketing professional and venture capitalist with more than 15 years experience. In 2010, he joined Google's corporate venture capital team where he helps grow and accelerate portfolio companies and identifies new investment opportunities for Google Ventures. Krane joined Google Inc. 10 years ago as the company's director of global communications and public affairs where he oversaw a significant percentage of the company's PR and communications programs and worked as a member of the senior leadership team to grow Google from a small start-up to a multi-billion dollar global enterprise.
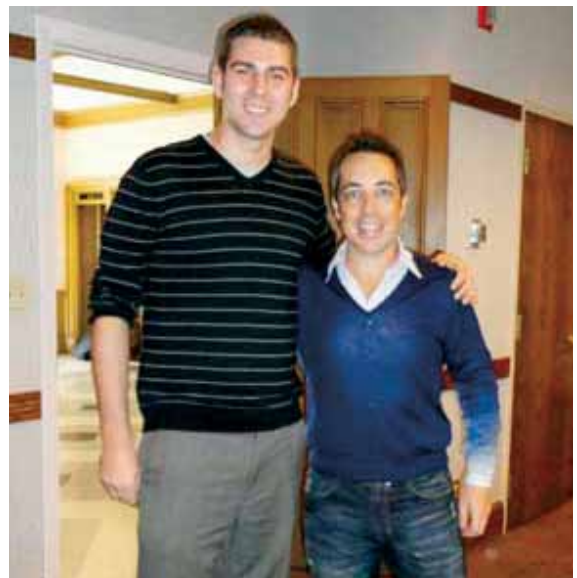
Sam Parsons, pictured here with Google's David Krane (right), will use his scholarship to work on a student-run informatics and computing-related e-magazine.

Young women's computing accomplishments rewarded

High school students named winners of Indiana-NCWIT Award for Aspirations in Computing

The National Center for Women & Information Technology (NCWIT) and a consortium of 10 Indiana universities and 15 Indiana corporate sponsors recently recognized 20 high school women from around Indiana for their accomplishments and aspirations in computing and technology.

The young women were named winners of the Indiana-NCWIT Award for Aspirations in Computing. The winners were selected by NCWIT and Indiana STARS, a multi-purpose computing coalition led by Indiana University and made up of university, industry, K-12 and community partners.

"With technology jobs projected to grow faster than all other job sectors in the next decade, it's imperative that we nurture the computing aspirations of women, who will make up half the professional workforce," said Lucy Sanders, CEO and co-founder of NCWIT.

The winners were recognized during an awards celebration in January at the OneAmerica corporate headquarters in Indianapolis. Each winner received $250, an e-notebook, as well as scholarship offers from several computing departments throughout the state of Indiana.

Photo by Kendall Reeves

The winners of the Aspirations Awards at the dinner held in Indy this spring.

IUPUI student named Best Student Paper finalist

Klann

Jeffrey Klann, a PhD candidate in health informatics at the IU School of Informatics at IUPUI, has been named a 2010 best student paper finalist by the American Medical Informatics Association (AMIA).

Klann, also in his third year as a medical informatics fellow at the Regenstrief Institute, was recognized for his paper titled "A method to compute treatment suggestions from local order-entry data." The paper details his work to produce condition-specific treatment suggestions based entirely on physician treatment data.

Reminder systems have been proven to help physicians take better and more efficient care of their patients, but are few in number because content must be meticulously maintained. In this most recent paper, Klann builds upon his previous research that applied an e-commerce metaphor to physicians' treatment decisions and recommendations. Klann hopes to continue expanding this basic methodology to support larger and more complex models that can be used to develop general tools for decision and content support, compliance monitoring and even decision support systems driven entirely by local data.

[OF NOTE]

Undergrad Talent Show

The Second Annual IUB Computer Science Undergraduate Talent Show was held in early December at the Collins Coffeehouse. Thirteen solo and group acts ranging from stand-up comedy to musical acts to poetry reading were the highlights. We look forward to seeing what next year's event has in store!

Dean Schnabel travels to India

In early December, Dean Bobby Schnabel embarked on a week-long trip to India intended to foster partnerships between the School of Informatics and the Indian business community and increase awareness of the school's academic programs and research offerings to prospective Indian students who are exploring educational opportunities for graduate school.

"India is an important market for the School," said Dean Schnabel. "Not only is our student population from India rising, but businesses there are very receptive to developing partnerships for research and education."

Highlights of the trip included meetings in Pune and Bangalore with top business leaders to discuss research initiatives and potential partnerships with the school; serving as "inaugurator" of a bioinformatics conference in Pune; meetings with officials from the College of Engineering, Pune, the Indian Institute of Technology, Bombay, and faculty from a number of colleges in Pune, to discuss common interests. In addition, Schnabel participated in computing-related events – from giving a talk at the Pune chapter of the ACM/Computer Society of India to attending the opening executive dinner for the inaugural India Grace Hopper Celebration of Women in Computing conference in Bangalore – to promote the school and its programs.

Above: While in India, Schnabel moderated a bioinformatics conference hosted by Persistent Systems.

Left: DAC member and alumnus Anand Despande, founder and president of Persistent Systems, is pictured here on a visit to a museum in Pune during Dean Schnabel's trip.

Award-winning career services

The Indiana Chamber of Commerce and Indiana INTERNnet recognized achievements in internships and mentoring recently at the 2010 IMPACT Awards Luncheon in Indianapolis. Bloomington's Director of Career Services Jeremy Podany, pictured here with Indiana INTERNnet Board member Zaida Monell, was named 2010 Career Services Professional of the Year. Congrats, Jeremy!

ReFreshIndy project

For the second straight year, IUPUI web design students and professionals from ReFreshIndy, a local organization of web designers, developers and graphic artists, pulled out the stops in January to develop and launch brand new websites for four Indianapolis non-profit organizations in a span of only 48 hours.

Nearly 30 students and professionals ate, slept, and worked in the school's computer labs and classrooms over the two-day period to deliver fresh, fully-operational websites on time and at absolutely no cost to the organizations – all in the name of community service and professional development.
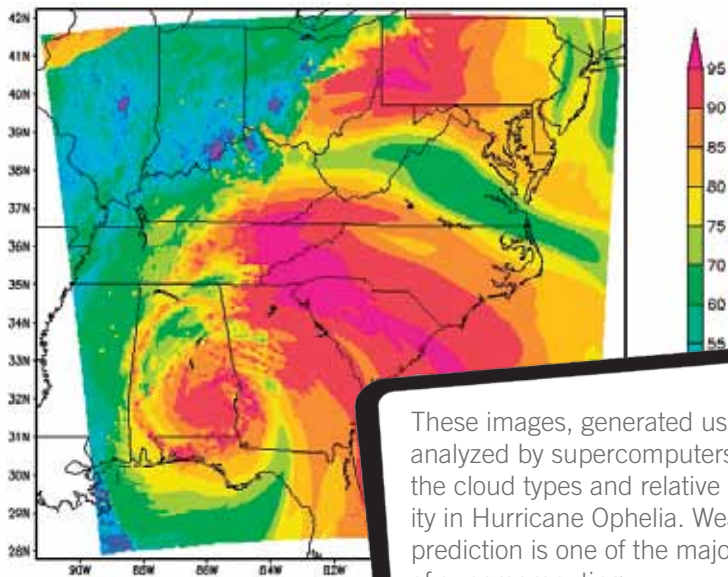
Indy East Asset Development, Teacher's Treasures, Anna's Celebration of Life Foundation and the Sustainable Library Citizens Coalition all sport new professionally designed websites thanks in part to students from the School of Informatics at IUPUI!

SUPERCO

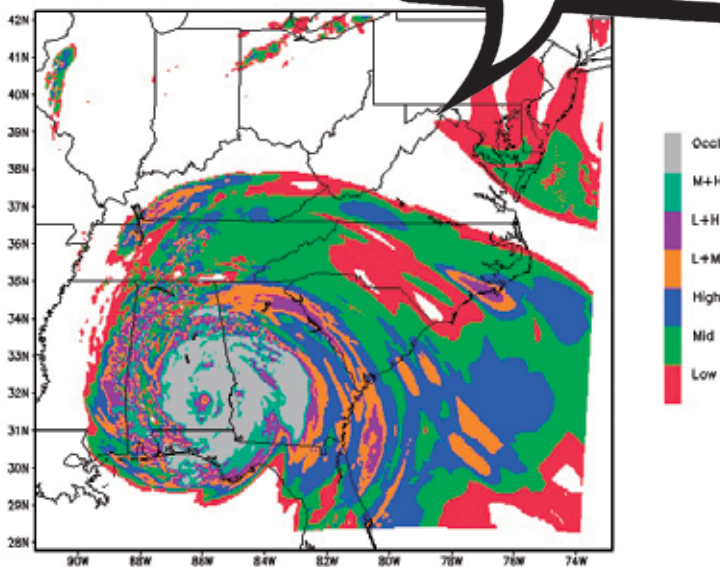IU Informatics and Computing faculty
and e-science research, capitalize

Relative Humidity

> These images, generated using data analyzed by supercomputers, show the cloud types and relative humidity in Hurricane Ophelia. Weather prediction is one of the major drivers of supercomputing.

Cloud Types

By Lisa Herrmann, IUB communications and marketing manager

From HAL in the movie *2010: A Space Odyssey* to the famed chess match between Garry Kasparov and IBM's Deep Blue supercomputer to Watson on *Jeopardy*, the public has always been fascinated with the idea that a computer can take on today's most complex problems with ease. At the same time, we are a little uneasy with the idea that the same computer could "take over the world." Taking over the world is certainly a stretch, but today's supercomputers – systems with multiple processors, huge memories and storage, and special software for performing the world's most complex calculations – are simulating nuclear explosions, studying and predicting weather patterns with ever-increasing accuracy, and analyzing proteins that cause disease.

The modern "data explosion," combined with extraordinarily complex problems demands supercomputing approaches. Researchers here at the School of Informatics are working individually and in collaboration with leading universities and research organizations worldwide on a variety of ambitious projects – allowing IU and the School to tackle the large "what if" questions that have long-reaching impact in the world.

History of Supercomputing
Supercomputing is not a new area in the field of computing. In fact, it is one of the "foundations" of the computing field. Technology needs during World War II, mainly in the area of encryption and the development of the atomic bomb, prompted the development of the first generation of computers that could process large amounts of information in a relatively quick period of time.

The first supercomputer was introduced in the early 1960s, designed by Seymour Cray at Control Data Corporation (CDC), which led the market into the 1970s. Cray left CDC in 1985, founding Cray Research, a company that dominated the supercomputer market from 1985-90. Small com-

petitors cropped up in the late '80s and early '90s, but most failed, resulting in today's supercomputers being manufactured by large companies such as IBM and Hewlett-Packard.

Today's supercomputers are more powerful and more technologically advanced than ever. China's Tianhe-1A, which was named the fastest supercomputer in the world in September 2010, can perform mathematical operations 29m times faster than a supercomputer built in 1976. President Obama has put funding in his 2012 budget proposal for the development of the next generation of supercomputers, an exascale system, which are 1,000 times more powerful than Tianhe-1A

The next generation of supercomputers will allow for more detailed, in-depth models and simulations. Supercomputers, in turn, are dependent on cyberinfrastructure, the integrated framework of all information technologies with one another, to continue to do large-scale research projects that will tackle today's most challenging questions, and IU, with exceptional resources and expertise in the area of supercomputing research, stands poised to continue leading in this area.

Faculty Projects

Within the Bloomington portion of our School, there are several faculty who are working in the area of cyberinfrastructure and e-science, and who are relying on the power of supercomputing to conduct large scale research projects. Andrew Lumsdaine, Beth Plale, and Geoffrey Fox are all working on projects that capitalize on the power of supercomputers.

Computer science professor Andrew Lumsdaine, who has been at IU for 10 years and has done extensive work on Open MPI, a piece of software that is an implementation of the system Message Passing Interface, or MPI, that builds the "language" that the processors in a supercomputer use to "talk" to one another. He recently co-authored a paper on the noise within supercomputing systems which was given the prestigious Best Paper ac-

Insights from Dennis Gannon
Director, XCG Cloud Engagement at Microsoft and former SOIC professor

Gannon

How are cloud computing and supercomputing related?

Cloud computing refers to a style of computation done in a large data center, and if you compare these data centers to supercomputers, you see they are very similar in design. Each consists of hundreds of thousands of conventional computers mounted in racks, connected together by a network. However, that is where the similarity ends.

A supercomputer has a network that is designed to allow constituent computers the ability to communicate with each other at extremely high bandwidth and low latency. The network in a data center is designed to optimize communication at extremely high volume with the external Internet. The data storage in a supercomputer is provided through a separate attached storage system and the data storage in a data center is distributed across the individual computers.

Supercomputers are designed to execute, as fast as possible, a single parallel program with a fixed set of initial inputs. Cloud applications are services that simultaneously interact with thousands of users and never terminate. An example of a supercomputer application is a simulation of the first few moments of the early universe and terminates with a map of galaxy clusters. An example of a cloud application is a program that runs on your cell phone that sends your current location to the cloud and gets back a map of all the restaurants in your immediate area. This map application in the cloud is concurrently serving thousands of users and it never terminates.

How will cloud computing change the field of supercomputing (if at all)?

I do not expect cloud computing to change supercomputing. Supercomputers will always be needed to address the most challenging and important scientific problems. However, supercomputers are not easy to program and only a small fraction of the scientific community has the time or energy to learn to use them.

On the other hand, all of science is becoming more focused on extracting knowledge from the sea of data that now surrounds us. Cloud computing can bring large-scale data analysis to researchers who do not have access to supercomputers. People will use desktop tools and even smartphones to access and visualize the results of deep analysis of massive data collections stored in the cloud.

Supercomputing

Bloomington's Big Red supercomputer, seen here next to IU President Michael A. McRobbie, is one of the fastest university-owned supercomputers in the U.S.

Photo by Chris Meyers

colade at Supercomputing '10, the premiere international conference on supercomputing. Lumsdaine and his co-authors found that system noise impacts applications running across slower networks less than those running across faster ones. When system noise creates a bottleneck, it eliminates any advantage a faster network may have. This finding is crucial for the design of large-scale systems, because the noise bottleneck must be considered when a system is designed.

Distinguished Professor Geoffrey Fox leads the FutureGrid team, a four-year, $15-million National Science Foundation (NSF) project to develop new software to link together the supercomputers of tomorrow and enable new approaches to scientific research for problems of massive scale. The grant enables construction of FutureGrid, an experimental supercomputing network made up of almost 5000 advanced computer processing cores at Bloomington and five other locations in the United States.

In addition to leading FutureGrid, Fox has done extensive work on the National Science Foundation-funded PolarGrid, which models the melting rates of polar ice in the Arctic. The ice is melting twice as fast as it did 10 years ago, but how and why is not yet understood, so along with colleagues at Elizabeth City State University (ECSU) and the University of Kansas, Fox is working to find new answers about global warming.

IU's role in the PolarGrid project is designing and developing the cyberinfrastructure to analyze the massive amounts of data field scientists will gather. To accomplish this, Fox and his colleagues are building a network of computers and data banks that can quickly and efficiently analyze lots of data, even in the harsh climates of the North and South poles.

Beth Plale, associate professor of informatics and computing and director of IU's Data to Insight Center at the Pervasive Technology Institute, spends quite a bit of her time working on perhaps what is the biggest driver of today's supercomputers – weather prediction. Better computer modeling leads to more accurate forecasting, and prediction of severe weather, such as tornados. Plale works on the Linked Environments for Atmospheric Discovery (LEAD) project, funded by the National Science Foundation, with the goal of making meteorological data, forecast models, and analysis and visualization tools for research and education in problems related to climate, environment, and the atmosphere. This extensive project employs the IU Big Red supercomputer along with the TeraGrid, NSF's national network of high performance computing and data storage resources, to produce on-the-hour weather forecasts and create up to 600 weather images each day that will be delivered to mobile devices carried in the field by storm chasers. This information will be used to determine when and where tornadoes are most likely to occur.

These projects underscore the School's capacity to use its expertise in cyberinfrastructure and supercomputing to impact some of the most complex scientific issues of the modern era. As the technologies continue to advance, you can bet that IU and the School of Informatics will continue to be leaders in this exciting field.

Gannon

The cloud is also a platform for collaboration. As we build scientific data collections in the cloud, it is possible to build discipline-specific cloud based portals that contain tools and analysis resources needed to study the data. Social networks can grow around the resource that allow users to share results, insights and training. This is an idea that started in the supercomputing community as "science gateways," and the cloud is a perfect home for these services.

How will cloud computing change/impact the business community? The consumer?

It already has had profound impacts on both the business community and the consumer. Many small start-up companies are now using the cloud as their sole IT resource, because cloud-based infrastructure can grow or shrink as needed. Consequently, a small company need not invest in physical infrastructure to house servers, expensive networking and expensive environmental controls and physical security. Big companies use the cloud in the same way. In many cases it is used as "overflow capacity" when additional information processing resources are needed for short periods of time.

Consumers use the cloud every day. The original "cloud application" is Internet search. Companies like Google, Microsoft and Yahoo built their cloud infrastructure to support search, and then they expanded it to support other services like email, photo sharing, backup storage, and maps. I have four computers that I use almost every day, but I use the cloud to synchronize my digital files across all of them. That way, no matter which machine I use, I see the same data. All of the most useful smart phone apps are the ones that use cloud-based services to access information on the go.

What will cloud computing look like 10 years down the road? How can we expect our interactions with computers to change?

The cloud will become our pervasive information resource. As our physical environment (office, home, lab) becomes more instrumented with sensors of various types, we will enter into a new era of computer interaction in which our voice, gestures and expressions will be the input and controller of our information environment. Surfaces of all types will be displays. The nexus of these information flows will be the cloud.

[CUTTINGedge]

News on faculty research and publishing

Genetic analysis leads to new discovery

SOIC team helps to identify animal with the most genes

Two faculty members and a post-doctoral student from the School were part of the team that recently identified *Daphnia pulex*, also known as the water flea, as the animal with the most genes. This near microscopic freshwater crustacean has about 31,000 genes, compared to humans who have about 23,000.

Daphnia is the first crustacean to have its genome sequenced. Professors Haixu Tang, Yuzhen Ye and post doctoral student Mina Rho were part of the Daphnia Genomics Consortium, an international network of scientists led by the Center for Genomics and Bioinformatics (CGB) at Indiana University Bloomington and the U.S. Department of Energy's Joint Genome Institute. The team announced its findings in the Feb. 3 issue of *Science*.

Tang and Rho worked on the analysis of the mobile genetic elements (MBEs) in the Daphnia genome, finding a highly diverse distribution of MBE families in comparison with other arthropod genomes. Tang was also involved in the validation of the original Daphnia genome assembly. Yuzhen Ye identified surprisingly complex domain organization when analyzing genes in the Daphnia genome.

The Daphnia pulex, or water flea, is a near microscopic freshwater crustacean with about 31,000 genes compared to humans who have about 23,000 genes.

Fox named distinguished professor

One of SOIC's own receives IU's highest honor

Fox

Five IUB professors have been promoted to the distinguished rank this year, including the School's own Geoffrey Fox. The title of Distinguished Professor, the most prestigious academic appointment Indiana University can bestow upon its faculty, was created by the IU Board of Trustees in 1967.

Professor Fox came to IU Bloomington in 1997 from Cal Tech and has supervised more than 60 PhD theses, published nearly 1,000 papers, and received tens of millions of dollars of grant funding.

In addition to serving as a professor of informatics, computing and physics, Fox (BA'64, MA'68, PhD'67, Cambridge University) is associate dean for graduate studies and research in the IUB School of Informatics and Computing, and serves as director of the Digital Science Center at the Pervasive Technology Institute.

Fox is a founding member of the National Science Foundation's Center for Research on Parallel Computation and has produced work on parallel computation that is recognized as the start of the revolution in scalable scientific computing and thus as having influenced the design and programming of virtually every high-end supercomputer in use today.

> "THE TITLE OF DISTINGUISHED PROFESSOR IS THE MOST PRESTIGIOUS ACADEMIC APPOINTMENT INDIANA UNIVERSITY CAN BESTOW UPON ITS FACULTY."

Lumsdaine Garners Supercomputing 2010 Accolades

Lumsdaine

A paper co-authored by computer science professor Andrew Lumsdaine and Timo Schneider of the University of Technology Chemnitz received Supercomputing 2010's Best Paper accolade. Supercomputing is the premier annual conference event for the international supercomputing community, drawing thousands of participants and paper submissions from all over the world.

The winning paper, *"Characterizing the Influence of System Noise on Large-Scale Applications by Simulation,"* analyzes the impact of system noise, or communication delays, on the performance of large-scale applications running on multiple computer processors connected over a network. Lumsdaine and Schneider found that system noise impacts applications running across slower networks less than those running across faster ones.

When system noise creates a bottleneck, it eliminates any advantage a faster network may have. This finding is crucial for the design of large-scale systems because the noise bottleneck must be considered when a computer system is designed.

"The committee believes that this is likely to be the definitive paper in a debate on the impact of system noise that has been going on for a decade," said Barbara Chapman, technical papers co-chair at Supercomputing 2010. Congratulations, professor Lumsdaine!

[OF NOTE]

Lumsdaine's winning paper analyzes the impact of system noise, or communication delays, on the performance of large-scale applications running on multiple computer processors connected over a network.

Mannheimer, Palakal receive Google award for "audemes" study

Mannheimer

Palakal

IUPUI professors Steve Mannheimer and Mathew Palakal were the recipients of a $50,000 Google Research Award in support of their work exploring the semantic and cognitive value of non-speech sound.

The award will fund a one-year project that uses short but complex collages of sound effects and music – referred to as "audemes" – to supplement K-12 textbooks and develop audeme-based games for students at the Indiana School for the Blind and Visually Impaired.

The current Google-funded project, which builds upon three years of previous research, engages students in further exploration of how sounds can combine to form new meanings with greater semantic richness than names or verbal labels.

Mannheimer and Palakal hope to incorporate their findings into a rich "audeme dictionary" of partic-ular use to students whose primary sensory channel is auditory.

But the project may eventually have even broader applications. Mannheimer and Palakal believe that audemes and non-speech sound in general represent an under-utilized platform for cognition and interface design, especially as consumer technologies offer greater multimedia capabilities, handheld devices with small screens become increasingly popular for accessing information, and books, including student textbooks, evolve onto digital platforms.

Google Research Awards are a reflection of Google's commitment to the support and development of new research and technologies emerging from university faculty. The awards are given annually to academic institutions and researchers worldwide pursuing innovative research aimed at improving information access.

Medina receives Outstanding Junior Faculty award

Medina

Assistant professor Eden Medina was one of five faculty members from the Bloomington campus to be honored with the IU Outstanding Junior Faculty Award this spring.

This annual award enables faculty to enhance their research and recognizes junior faculty members who have devoted considerable time to IU's teaching, research and service missions.

Medina joined IU in 2005 as an assistant professor in the School of Informatics and Computing, as well as an adjunct assistant professor in the Department of History. She received her Ph.D. in 2005 from the Massachusetts Institute of Technology and she also holds a degree in electrical engineering and a Certificate in Women's Studies from Princeton University.

IUPUI Informatics Associate Dean authors book

## Hayes addresses health informatics' potential to improve lives of those with type 2 diabetes

Hayes

IUPUI associate dean Barbara Hayes recently released a new book that offers a uniquely patient-centered perspective on health informatics and its potential to improve the lives of those living with type 2 diabetes and other chronic illnesses. Hayes co-edited the book, published by MIT Press, with William Aspray, PhD, from the School of Information at University of Texas at Austin.

The book, titled *Health Informatics: A Patient-Centered Approach to Diabetes*, examines the changing information problems patients with diabetes encounter as they cope with progressive stages of the disease. Patients, healthcare providers, and computer and information scientists are all interested in using digital tools to ease the burden of chronic illness.

The book addresses the unique challenges of utilizing information technology in the complicated healthcare milieu. It offers chapters on specific topics including ubiquitous computing, educational gaming, digital "coaches" that help with diet and exercise, electronic medical records, patient access to healthcare information and challenges in health IT research collaborations.
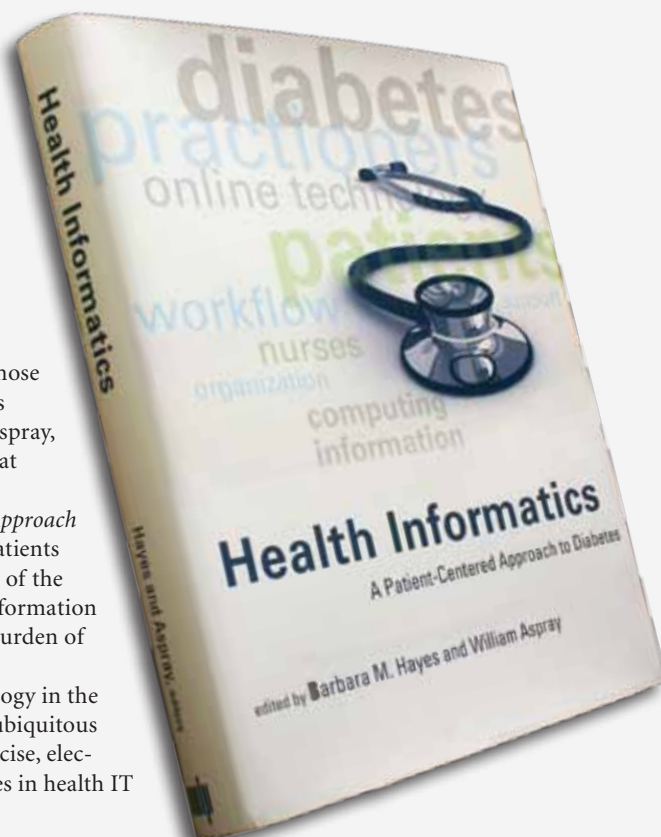
[INdevelopment]

Each year, the IU School of Informatics, the Dean's Advisory Council, and the IU Informatics Alumni Association honor individuals for outstanding career achievement, service to IU, and contributions to the field of Informatics. The following awardees were honored on April 15 in Indianapolis.

2011 Career Achievement Award

Scott Jones, BS'84, Hon. DsC'02

Driven by curiosity and creativity, Scott Jones emerged from formal education prepared to make sparks fly in the technological world. After graduating with honors from Indiana University with a degree in computer science, he worked as a research scientist at MIT's Artificial Intelligence Laboratory in the early 1980s before founding and guiding numerous companies to successful outcomes.

At age 25, he co-founded and helped lead Boston Technology as its Chief Scientist and Chairman, where he acquired patents for the massively scalable, easy-to-use voicemail system now used by over a billion people around the world. As founding CEO at Gracenote, Jones assembled the team and key technologies to dominate the world of music identification and discovery, which was sold to Sony in 2008 for $260 million. Gracenote services are being accessed globally, tens of billions of times per year, by applications such as Apple's iTunes. Jones currently serves as Chairman and Chief Executive Officer of ChaCha, which allows anyone to ask questions from almost anywhere including mobile phones, phone applications, online, and through social networks. ChaCha's mobile service allows people with a mobile phone to ask a question in conversational English and receive an answer as a text message. Since the 2008 launch of its unique "ask-a-smart-friend" platform that Jones developed, ChaCha has answered more than a billion questions from more than 32 million unique users per month.

Jones remains actively involved with the School of Informatics, Indiana University and the Indianapolis community More on Jones is available at www.scottajones.com and www.chacha.com. You can follow him on Twitter at www.twitter.com/chachaman.

Jones

2011 Distinguished Service Award

Mary Lacy McKenzie, MS'73

McKenzie

An ardent advocate of education, Mary Lacy McKenzie received her first college degree in 1954 and continued her formal learning until she received her MS from Indiana University in Indianapolis in 1973. After becoming certified as a Registered Record Administrator by the American Health Information Management Association in 1954, she entered the field of health records management. Her career spanned a number of states, institutions and technologies as medical record-keeping moved from paper to film to fiche and, currently, to digitalization.

In 1967, McKenzie became an assistant professor at the IU School of Medicine in the School of Allied Health Sciences, where she also directed the Health Information Administration (HIA) program. In 1977 she assumed the role of associate professor, while continuing as director of the HIA program until her retirement in 1996. In her 29 years directing the program she contributed advancements including conducting clinics in nontraditional settings. Graduates of the program consistently scored above the national average in the Registered Health Information Administration certification examination. Before joining the university she directed medical records departments at Grant Hospital in Chicago and IU Hospitals in Indianapolis.

McKenzie's contributions were not limited to classrooms or offices. She was an active member of her state Associations of Medical Record Librarians across the Midwest from Minnesota to Indiana, always chairing committees and serving in advisory roles. She also served a year as president of the American Health Information Management Association.

Her service to her University community was comprehensive, from curriculum review and task forces to admissions and scholarship awards. McKenzie also lent her services to such civic enterprises as the Medical Explorer Scouts and the Indianapolis Altrusa Club.

In 2003 she and her HIA program successor Janatha Ashton were jointly honored by the establishment of an endowed fund in their name for the HIA directorship.

2011 Young Alumni Award

Brad Gessler, BS'04

Brad Gessler launched his career at Deloitte Consulting in Chicago at the age of 19 after graduating from Indiana University in 2004 with a BS in Informatics. After three years of management consulting and racking up hundreds of thousands of frequent flier miles, he traded in his collared shirts for T-shirts and started working on an idea at a coffee shop.

In 2008, that idea became Poll Everywhere and received funding from Y Combinator, a world-renowned seed fund. Gessler and his co-founders have since grown the company into the world's largest cloud-based mobile surveying platform that makes it possible for anybody to create American Idol-style polls inside PowerPoint using standard web and mobile-phone technology.

Today, Poll Everywhere is used by millions of people in Fortune 500 companies, K-12 classrooms, universities, and government institutions to do everything from picking winners for audience choice awards, to gauging student comprehension, to determining winning candidates for political primaries. It's reigning in the use of mobile phones in classrooms and changing how people interact at live events.

Gessler currently resides in Berkeley, California with his wife, Jeannette, where she is completing her M.B.A. at Berkeley-Haas. When he's not working on his start-up, you'll find him hiking, skiing, traveling, eating, or searching for the world's best cup of coffee.

Gessler

2011 Young Alumni Award

Steve Hodges, BS'04

Steve Hodges received his bachelor's degree in media arts and science from the IU School of Informatics at IUPUI in 2004, with a certificate in applied computer science from the Purdue School of Science. He is currently lead user experience developer at Mobi Wireless Management in Zionsville, Ind., responsible for the usability and interface of Mobi's software-as-a-service product.

Previously, Hodges was the architect behind IUPUI's digital communications from 2004-10 (in the campus's office of communications and marketing). His media and web projects were recognized in 11 national and regional competitions, including awards for iterations of the IUPUI campus website, several video series, and interactive applications. The IUPUI Web site was named one of the twenty most usable university home pages in *"Best of the Best" .edu sites, Guide to Usable Higher-Ed Homepage Design (2009)*.

Today, his professional interests are varied, including building usable Web sites, communications strategy, user interface design and development, digital signage strategy, and video and motion graphics production. Personally, he enjoys the outdoors with his wife and children who have together explored eight U.S. national parks in the past few years.

Hodges has been an active alumnus, volunteering frequently in Informatics career development courses, mentoring students through internships, and designing the current Indianapolis school's website.

Hodges

2011 Distinguished Service Award

Don Aquilano

Don Aquilano's tenacity and entrepreneurial drive exhibited itself early in his career when, frustrated that Hewlett Packard was on campus solely to recruit electrical engineers (he was a production and operations management major, therefore, more of an industrial engineer), he tracked down the recruiter and refused to let him leave until he'd managed to secure a job offer.

After five years at Hewlett Packard and co-founding two small software companies in his spare time, Aquilano left HP for business school at Harvard. Upon graduation, he wanted to gain experience in as many domains as possible, first joining Boston Consulting Group, consulting on strategy for global IT and pharmaceutical companies, and then Diageo (owner of consumer product businesses including Burger King, Pillsbury, and Guinness), where he was a manager of strategy for Guinness for the Americas and Caribbean.

His first foray into the venture capital world was with the Fox Group in New York, where he participated in the early funding of companies including WebMD before being recruited to join Gazelle TechVentures as its second managing director in April, 2000. Gazelle is ranked in the top 10% of venture funds nationally for its 2000 vintage, and Don participated in all of the firm's successful investments, including Rubicon Technology (NASDAQ:RBCN), a Russell 2000 company, where he serves as executive chairman. Five years later, Aquilano agreed to join Blue Chip as a managing director, where he manages investments in software and services companies Aprimo and Knowlagent.

Aquilano is the chairman of the advisory board for Indiana University's School of Informatics, serves on the advisory boards of the Entrepreneurship and Innovation Centers for IU and Ball State, and teaches the Entrepreneurship capstone course at Purdue University.

Aquilano

These outstanding alumni generously give of their time and talents. The school needs your help, too. To get involved or for information about IUAA membership, contact Danny Kibble at djkibble@iupui.edu or Rachael Jones McAfee at rlmcafee@indiana.edu.

Photos courtesy of IUPUI

WIRED

Our Infatuation with Technology

In early February, IUPUI hosted "Wired: Our Infatuation with Technology," a one-day conference hosted by the alumni associations of the Schools of Continuing Studies, Informatics, Liberal Arts, Law-Indianapolis, Kelley School of Business, Public and Environmental Affairs, Engineering and Technology, Physical Education and Tourism Management, Medicine and Science as well as the Central Indiana Chapter of the Indiana University Alumni Association.

Over 200 attendees participated in the program that included an introduction by Amy Conrad Warner, IUPUI Vice Chancellor of External Affairs and Dean's Advisory Council member, two presentations by IUPUI informatics faculty members, and a keynote speech by Scott Jones, CEO and co-founder of ChaCha.

Upcoming & recent events for alumni

April 29 • IUB Capstone Fair, Informatics buildings, 3-6 p.m.

June 19-24 • IUB Informatics and Computing Summer Camp

Sept. 24 • IUPUI Annual Regatta

Oct. 29 • IUB Homecoming vs. Northwestern, game time TBA

For details or reservations, e-mail Danny Kibble at djkibble@indiana.edu or Rachael Jones McAfee at mcafee@indiana.edu

class notes

1960s

In May 2010, **Donald A. Byrd**, BM'68, MS'75, PhD'84, was one of 80 educators named as 2010 Woodrow Wilson Indiana Teaching Fellows — often regarded as the "Rhodes Scholars" of teaching. The fellowships are conferred by the Woodrow Wilson National Fellowship Foundation of Princeton, N.J. Each of the fellows received a $30,000 stipend to enroll in a master's degree program that provides intensive clinical preparation for teaching math and science in urban and rural high schools. In return, the fellows commit to teaching in high-need Indiana schools for three years. Byrd is a senior scientist and adjunct associate professor of informatics and music at IU.

1970s

Barbara McGrath Hayes, BA'76, MSW'81, MS'01, is co-editor (with William Aspray) of two recent books published by the MIT Press. In *Health Informatics: A Patient-Centered Approach to Diabetes*, published in October 2010, experts in technology and medicine use diabetes to illustrate how the tools of information technology can improve patient care. *Everyday Information: The Evolution of Information Seeking in America*, published in February 2011, provides an intimate, everyday perspective on information-seeking behavior, reaching into the social context of American history and American homes. Hayes is associate dean for administration and planning at the IU School of Informatics at Indiana University–Purdue University Indianapolis. She lives in Zionsville, Ind.

1980s

Donald A. Aker, BS'83, of Portsmouth, R.I., deputy technical director at the Naval Undersea Warfare Center Division, Newport, has won the Rhode Island Federal Employee of the Year Bud Gifford Leadership Award. The award is presented annually by the Rhode Island Federal Executive Council to honor a federal employee who has demonstrated exceptional leadership. Aker has played a pivotal role in maintaining the Navy's superiority in undersea warfare and has distinguished himself as a leader and innovator for more than 25 years, helping NUWC Division, Newport become a world-class research, development, test, and evaluation organization. He is responsible for the leadership and management of all non-military site functions, overseeing all aspects of the command's day-to-day technical and business operations.

Scott A. Jones, BS'84, DSc'02, founder of Boston Technology, Gracenote, and ChaCha, is featured in a recently released book, *How They Did It: Billion Dollar Insights from the Heart of America*, published by RedFlash Press. Author Robert Jordan interviewed 45 prominent entrepreneurs and company founders, who together are responsible for creating $41 billion in company value. Jones lives in Carmel, Ind.

Jeffrey L. VanVoorhis, BA'85, was promoted to president of IntraPrise Solutions Inc. in 2009. The company provides business and technology solutions for companies in the health-care and financial-services industries. He works in Warminster, Pa., and lives in Landenberg, Pa.

2000s

"After completing my bachelor's degree in economics and computer science, a master's in economics, and MPA at the University of Washington," writes **Kathryn Wise Ewing**, BA'01, "I worked as a fiscal and policy analyst for the city of Seattle. My husband, Andy, recently finished his PhD at Eckerd College in St. Petersburg, Fla. I have joined him and am settling into my new job as a budget analyst for the city of St. Petersburg."

Joseph M. Beemer, BA'09, is a software engineer with General Dynamics in Scottsdale, Ariz., where he lives.

Grant A. Carlile, BS'10, writes, "I am a graduate student in the IU School of Informatics and Computing, with a specialization in human-computer interaction. My affiliate groups are GeekSquad, Best Buy, Bloomington Hospital, Jerico Metals, FIRST Robotics, ICCA, ICSA, and Phi Eta Sigma. I am [also] a dean's list member."

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Join us: **facebook.com/IUALUMNI** or Twitter **@IUAA.**

Thank you, generous supporters.

The Indiana University School of Informatics thanks and honors the alumni, companies, and friends who supported the IU School of Informatics with financial contributions from Jan. 1, 2010 through Dec. 31, 2010. You make the stories in this magazine possible.

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[SOIC SNAPSHOT]

The annual spring IT career fair was held in Alumni Hall in February. This year, almost 400 students networked with the 35 companies that attended, looking to fill internship and employment opportunities.

Save the Date!
Fall IT Career Fair
Alumni Hall, IUB Campus
Sept. 20, 2011
11 a.m. to 3 p.m.