Michael McRobbie voted national ‘IT Leader’

Michael McRobbie, Indiana University vice president for information technology and chief information officer, has been named one of Computerworld magazine’s 2004 “Premier 100 IT Leaders.”

The annual list, traditionally published in the magazine’s first issue of the year, honors individuals who are judged to be among the top information technology strategists in the United States.

McRobbie, who also holds a second vice presidency in research at Indiana University, was one of six leaders chosen from the academic sector. McRobbie joins vice presidents and CIO’s from financial corporations, such as Bank One, American Express, Merrill Lynch, and Goldman Sachs, and from technology organizations, including Sun Microsystems, Novell, Cisco Systems, Nortel Networks, and Palm.

From a pool of 598 candidates, Computerworld editors and a panel of 10 former winners of the Premier 100 IT Leaders Award chose 100 individuals who “use their wit and fortitude to keep their staffs and companies headed in the right direction,” according to the magazine. This year’s honorees oversee IT budgets ranging from $100,000 to more than $1 billion.

McRobbie is a professor of computer science, informatics, and philosophy, and an adjunct professor of cognitive science and information science at Indiana University. McRobbie has chaired or been a member of advisory committees serving the National Science Foundation, Internet2, the University Consortium for Advanced Internet Development, and other state and national organizations.

Notes from the chair

Greetings from IU Computer Science

We have a lot of exciting news to tell you about. First, Dennis Gannon, who started as department chair eight years ago, has stepped down. He will be a tough act to follow. During his tenure, Dennis helped establish our department as a major center of systems computing, creating the Pervasive Technology Laboratory with the help of a large grant from Eli Lilly and pursuing many of his own projects, as well as encouraging and supporting the efforts of our faculty, both old and new. He also played an instrumental role in the development of the new School of Informatics. He has led efforts toward the currently planned transition of the Department of Computer Science from its present membership in the College of Arts and Sciences to becoming the first self-contained department in the School of Informatics. We are grateful to Dennis Gannon for his enthusiasm and vision. I am lucky to inherit such a vigorous organization from him.

We have a number of new faculty members in Lindley Hall. Andrew Lumsdaine joined us from Notre Dame in 2001 as a tenured associate professor. We have been fortunate to attract four women to our faculty during the last few years. Catharine Wyss received her PhD in computer science from IU in 2002 and now holds a joint appointment as an assistant professor in CS and informatics. Ray Connelly received her PhD in CS from the University of Illinois in 2003 and was appointed assistant professor in spring 2003. She also directs one of the major projects at Internet2, the University Consortium for Advanced Internet Development, and other state and national organizations.

Congratulations to new CS alumni!

Yohei Kaneko is going to work for Fujitsu as a software engineer. He will be living in his native Japan. Scott McCarthy will be heading to Boston as a software engineer for Raytheon. Jude Cooks began law school at IU this fall. Mike Rachey is entering a PhD program in computer science at the University of Chicago. Nicole O’Hearn is a case manager for adults with mental illness at the Center for Behavioral Health in Bloomington. We are thrilled that Trisha Boyd, Adam Miller, and Gata Jantarawetagul are staying with us to pursue graduate degrees in computer science. Megahan Clark is staying at IU to pursue a master’s degree in human–computer interaction. Our congratulations go to graduate Johnny Sweeney on his recent marriage. He and his wife are moving Boston, where he will be working for Raytheon.
Faculty news

Andrew Hanson, his students, and collaborators at the University of Chicago are just finishing a 20-minute NASA-sponsored video animation exploring astronomy using computer graphics technology. The animation is tentatively titled *Solar Journey* and will be released on DVD through NASA and select educational outlets.

We congratulate Ed Robertson for winning the Trustees’ Teaching Award for Faculty in computer science. Congratulations also go to Suzanne Menzel for winning both the Trustees’ Teaching Award for Lecturers and the Departmental Teaching Excellence Award.

Beth Plale and Suzanne Menzel were the IU organizers for the Central Indiana Celebration of Women in Computing conference. The conference brought students and faculty from universities around the Midwest and research and industry leaders together for a weekend at McCormick’s Creek State Park.

Paul Purdom attended the SAT 2004 conference in Vancouver, B.C., in May.

Faculty members Rick McMullen, Randy Bramley, David Leake, and Beth Plale, along with research scientist Michael A. Evans and computer science department graduate students, have been studying distributed knowledge capture and expertise-sharing to build systems to support cooperative work. A current project, done in collaboration with the U.S. Navy/Crane NSWC, studies the procedures and interactions of shipboard sailors and shoreside engineers as they collaboratively troubleshoot shipboard electronic systems.

Beth Plale and Dennis Groth recently received a Philanthropy and Education Grant from Hewlett-Packard. One of the goals of their project is the coupling of high-end technology with grid computing applications. Grid computing gathers idle processing energy of computers on the grid system and then applies that energy where it is needed. The net effect is a huge increase in the processing capacity that would have traditionally been available to an individual machine.

Kay Connelly joined the faculty in fall 2003 with a joint appointment in CS and Pervasive Technology Labs. Connelly’s research focuses on pervasive computing. Her projects include

- A health-care application in which technology is used to help chronically ill patients manage their illness;

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Brown turns toddler toy into teaching tool

This spring, the students in Geoffrey Brown’s Honors Computer Structures class are going to be playing with a preschool toy in order to become better computer scientists. Brown is developing a new lab on microprocessor programming and architecture in which he will be using the Little Tikes Goofy Giggles™ toy as a platform for developing a comprehensive set of experiments leading to the creation of a “line-following” robot that can autonomously follow a line drawn on the floor.

After teaching operating systems last year, Brown realized that students would be far better prepared to get maximum utility from that class if there were a fundamental change in the way assembly language was taught in the earlier computer structures class. Then, Brown encountered the Goofy Giggles robot. According to Brown, “The idea for use of this Goofy Giggles toy occurred to me after my toddler was given one for a present. I found the entire constant flow of data from weather stations to achieve more accuracy in local forecasts.

IUB computer scientist Andrew Lumsdaine will lead a $650,000, three-year NSF Middleware Initiative Project to develop “middleware” that protects a scientist’s computer data even when the underlying hardware fails. Middleware is a layer of software between a network and computer applications that provides services such as identification, authorization, and security. Reliable middleware allows scientists to focus more fully on their research without having to worry about the reliability of their computing tools.

Pervasive Technology Labs research scientist and project leader Marlon Pierce, PTL Community Grids Lab director Geoffrey Fox, and IUB computer scientists Dennis Gannon and Beth Plale will use their $870,000 portion of a larger, three-year NMI grant to develop a software system that makes it easier for people to participate in grid computing projects. Grid computing is a relatively new phenomenon, in which many computers in different locations are networked together in order to cooperate on a single computing problem. Grids also enable scientists to collaborate more fluidly.

IUB computer scientists Donald F. McMullen, Randall Bramley, and Kenneth Chiu and IUB chemist John C. Huffman will use a $1.5 million, three-year NMI grant to develop a software interface that helps make available large scientific instruments to biomedical researchers across the globe through a grid computing environment. Such a grid can dramatically increase the ability of research collaborators to access and share large, centrally located and costly scientific instruments, as well as to easily access and analyze data collected from these instruments, regardless of their physical location.

Gregory Rawlins is working on a book based on his courses taught in informatics over the past four years. The book, called Shoulders of Giants, is an attempt to sketch out how information has transformed our species over the past 50,000 years. A draft is available online at www.roxie.org/books/shoulders. He is also working with his students on Fluency, a software project to build a flexible interface builder. The idea is to create a platform on which both programmers and end-users can build their own interfaces visually, much as in a regular IDE, except that the interface stays flexible on completion so that even end-users with no formal programming knowledge can reconfigure it as they please to get the interface experience they want. The project lives at fluency.knownspace.org. Fluency is part of the more general KnownSpace project (see www.knownspace.org). Rawlins is teaching his Design Patterns in Java class this fall (see www.cs.indiana.edu/~rawlins/b490.html) and polishing Bleeding at the Keyboard, his book on Java (see www.roxie.org/books/bleeding).
In 2003, a small group of women students and three dedicated women faculty members created the first-ever Indiana University Women in Computing group. These women joined together to spread the word that not all computer scientists are the same. They were the voice of a computing culture that said, “I’m a real computer scientist. I don’t like *Hitchhiker’s Guide*, I don’t recompile Linux kernels. I like to read historical fiction, run, do yoga, and volunteer in my community.”

WIC’s mission is to provide support and information to further enhance the education of women in computing at IU. The group includes and supports women in computing disciplines both inside and outside the CS department, and includes faculty, graduate students, undergraduate students, and technical staff.

To achieve their goals, they provide

- A forum for issues pertaining to women in computing;
- Networking and mentoring opportunities;
- Teamwork and leadership opportunities;
- Professional development through education about career opportunities in computing and interaction with the industry; and
- Community outreach, such as involvement with WonderLab, Bloomington’s hands-on science museum for children, and the roadshow that WIC members are presenting to high schools throughout the Midwest in an attempt to recruit more talented women.

In the spring, five WIC members presented posters at the Indiana University Women in Science Research Day. This event, held in the IMU, was co-hosted by the Office for Women’s Affairs and the Women in Science group. Women from all across campus and from multiple scientific disciplines came together to share the research they were working on. **Katie Moor**, **Ying Liu**, **Nithya Vijayaakumar**, **Tei Laine**, and **Poornima Venkatakrishnan** presented posters.

Also this past spring, **Beth Plale** and **Suzanne Menzel** organized the Central Indiana Women in Computing Conference. The conference brought students and faculty from universities around the Midwest, as well as research and industry leaders, together for a weekend at McCormick’s Creek State Park. This prestigious group focused on a variety of issues facing women in computing today.

This fall and spring, two graduate students and one professor are going to travel around the Midwest demonstrating to high school students the wide variety of things computer scientists do and the diversity of people who are computer scientists. It is understandable, and really quite logical, that our culture stereotypes football linemen as big, strong, tough men. But, while it might be understandable, it certainly is not logical how we stereotype computer scientists.

Computer science is not a field limited to one type of work, but contains a variety of jobs, tasks, and people. “To say computer science is about computers is the same as saying astronomy is about telescopes.” While computer scientists do include people who enjoy *The Hitchhiker’s Guide to the Galaxy* — one of the longstanding stereotypes — there are also computer scientists who enjoy historical fiction. Women in Computing is helping to demonstrate this to a new generation of students.

To further emphasize their point, WIC often quotes Edsger Dijkstra, a noted pioneer of the science and industry of computing, who said: “The question of whether computers can think is like the question of whether submarines can swim.”

— Edsger Dijkstra, noted pioneer in the science and industry of computing.

Among the students in WIC are, clockwise from bottom, Deepti Kodeboyina, Fang (Cherry) Liu, Ying Liu, Nithya Sivaraman, Nithya Vijayaakumar, and Poornima Venkatakrishnan.

“The question of whether computers can think is like the question of whether submarines can swim.”

Women in Computing at Indiana University can be found at www.cs.indiana.edu/wic/.
Dialysis project pairs computers with medical application

This article by Katie A. Moor and Kay Connelly describes their work on a medically related computer problem and the challenges they are encountering. Moor and Connelly, both members of Women in Computing and of the Indiana University Computer Science Department, are working with nurses at IUPUI on this exciting new project.

During the summer of 2003, we were approached by nurses at Indiana University Purdue University in Indianapolis to create a proof-of-concept handheld application for dialysis patients to monitor fluid and sodium intake. Dialysis patients can have, on average, only one liter of water and two grams of sodium a day. Currently, patients try to remember or write down in a food diary their fluid and sodium consumption. However, these techniques are insufficient since 80 percent of the patients are unable to restrict their fluid intake. If patients miscalculate their fluid intake they run the risk of hypertension, pulmonary edema, and death.

The nurses hoped a handheld application would benefit patients by allowing patients with reduced cognitive skills to easily record dietary information and get immediate feedback on fluid and sodium intake. Handheld computers could help reduce the stigma of disease because the general population is accustomed to seeing people tap on handheld computers instead of recording information in food diaries. The application would assist researchers in gaining information about patient fluid and sodium compliance for future studies. Monitoring fluid and sodium levels could help clinicians teach patients about the relationship between fluid consumption and their ideal “dry weight.” The nurses warned us that the user group would have varying literacy rates, computer skills, and visual acuity. Thus, the interface must be intuitive and use large icons to present information.

The dialysis patient handheld computer application has many challenges we are interested in working on. Here are some of the challenges:

- A key part of the research will be integrating technology into the lives of people who do not ordinarily use technology. We must design training exercises to give the participants enough confidence to use the application in their everyday lives.
- Another important part of the research will be developing a way to display large amounts of data on small displays. The handheld will have a limited display size for a lot of information (e.g., information about liquid intake and foods users can choose from). Presentation of information is critical for the usefulness of the application.
- Patients may have bad eyesight from complications related to end-stage renal failure. Various sized icons/presentation of information will be needed to make the application useful to all patients in the testing group.
- The Hawthorne Effect, in which people alter their behavior when they feel they are being watched, means that we will have to monitor patient usage for longer periods of time.
- The “Wow Effect,” in which people alter their behavior or use of an application because they are using a new “toy,” also means we will have to monitor patient usage for longer periods of time to normalize the effect.
- Patient privacy is an important concern. We want to help the patients understand how the food they consume affects their fluid and water consumption by providing patients and clinicians with information about patient diets without giving other groups (i.e., insurance companies) information that could limit career options and benefits.
- To decrease the volume of user data entry, we are outfitting the handheld with a scanner. Most foods have UPCs, thus users can scan the UPC and have the handheld query how much of the food item was consumed.
- Most of the patients in our study are unfamiliar with computers, thus the interface will have to be intuitive and easy to use.
- Decisions related to sending the data to doctors and recording food items that are not listed on the device raise certain questions for us: Should we use a docking station during visits? Wireless communication? How will this effect cost and power consumption?
- Battery use is another key issue. People will turn their handheld on and off many times a day to log what they have eaten.

From the chair

(continued from page 1)

the Pervasive Technology labs. Beth Plale joined us in 2001 as an assistant professor, following a postdoctoral position at Georgia Institute of Technology. Our newest faculty member, also from Georgia Tech, is Minaxi Gupta, who joins us as an assistant professor this fall.

Nancy Garrett, our invaluable grants specialist, retired at the end of June, after 26 years with the department and 43 years at IU! Nancy knows as much about grants administration as anyone could, and many faculty owe her a tremendous debt for her decades of remarkable service. Retired faculty member George Springer, who has continued to teach for us in recent years, will be cutting back his activities, but will continue to supervise the undergraduates. He owes much of its continuing success to George’s love of teaching and respect for our students and their intellectual development. We have been fortunate to have benefited from all that Nancy and George have done for the department over these many years.

While the details remain to be worked out, we are vigorously working on the prospect of moving the department to the School of Informatics next year. Stay tuned for further developments.

Thanks to the efforts of our faculty, staff, and students, the Women in Computing group is more active and successful than ever, and a number of our students and faculty have gained recognition for their contributions.

Please read on to learn more about what’s happening in and around Lindley Hall! Our department is full of ideas and activity, and I am at once thankful for the privilege of being able to lead our organization in these exciting times and humbled by the challenging tasks that lie before us.

— Andy Hanson

1The amount of fluid and sodium consumption allowed varies among patients.
Congratulations go to Meghan Clark, Stephanie Gato, and Laura Northrop, this year’s recipients of the Exxon Scholarship for Academic Excellence. Each was awarded $500 from the Exxon Corp. They were chosen based on their outstanding academic performance.

Bi Ling, a CS undergraduate student, along with Megan Lewis of informatics and two MSIS students, took first place in the Hewlett-Packard Mobility Competition. The team won for developing the business logic necessary to design and develop an application that would access the Oncourse database and deliver content to a wireless PDA in the correct format.

Graduate student Ruj Akavipat was given travel money to attend the 13th International World Wide Web Conference in New York City, where he presented a paper, “Small World Peer Networks in Distributed Web Search.” The paper presented preliminary results of research on peer-to-peer search systems that is being conducted by professors Filippo Menzer and Le-Shin Wu and Akavipat.

Akavipat reports, “It was a great experience for me to attend this conference. It is one of the best conferences on Internet-related technologies. I learned more about the current state of the community, and I also had a chance to connect with other scientists from other institutions. Both of these things will benefit our research and my postgraduate career.”

Earlier this year, graduate student Steve Cornett attended the ACM Conference on Computer–Human Interaction in Vienna, Austria. He presented his original research paper, “The Usability of Massively Multiplayer Online Roleplaying Games: Designing for New Users.” He also joined a team led by Microsoft Games Studio, including a panel of experts for a forum on “The Untapped World of Video Games.” Cornett says he “would like to thank the computer science department and the Friends of Computer Science fund for making this incredible opportunity possible.”

Thanks to a generous donation from the computer science department, a robot built by Alex Shaw, Charles Hart, Josh Bonner, Dan Bullwinkle, and Ryan Clarke will navigate its way across Dunn Meadow on Oct. 16. The Indiana University Robotics Club is holding the first, and expected-to-be-annual, mini-DARPA challenge. Seven robots will use GPS, a vision system, or transmitters to race around three waypoints in Dunn Meadow. Thanks go to friends of computer science for allowing us to fund a CS department robot for this event.

Toddler toy

(continued from page 3)

package quite impressive — especially when we took one apart (not my daughter’s!). Overall, the mechanical system is far better than on many robot platforms that are actually produced (at a far higher cost!) for experimentation."

The robot has a number of features that make it an ideal teaching tool. The students will be decoding data from an infrared sensor. The robot has a flash memory chip that stores and makes sound. Brown is hopeful that being able to make sound will motivate his students to master moving data.

The actual plan is to replace the existing electronics in the Goofy Giggles with a custom package based on a programmable microcontroller that interfaces to the existing motors, infrared sensor, and speaker, plus additional sensors to support the line-following function. The laboratory will consist of a series of experiments that initially replicate the existing function of the toy and then lead to the added line-following capability.

“Each student, or pair of students, will have their own experimental platform,” says Brown. “This will provide them with the opportunity to work on their own schedule, and, perhaps, at greater length than a traditional laboratory could support. I hope to exploit this added flexibility by having the students participate in an end-of-the-semester, line-following competition.”
Alumni notebook

1980s

Tim A. Pieszchala, BA’80, BA’82, is manager of condition monitoring at Dresser-Rand’s Control Systems operation in Houston.

Donald A. Aker, BS’83, was appointed technical operations director for the realigned Naval Underseas Warfare Center Division in March 2004. Prior to being selected for this position, Aker received many prestigious awards, including the Navy Meritorious Civilian Service Award and the Secretary of Defense Productivity Excellence Award, while working for the NUWC. He lives with his wife, Joanne, in Portsmouth, R.I., and can be reached at pure3313@yahoo.com.

Scott A. Jones, BS’84, has received many awards recently, most notably an honorary doctor of engineering degree from Rose–Hulman Institute of Technology. He was also presented with a 2001 CyberStar Award for his outstanding individual contributions to the technology industry. He is the co-founder, chair, and CEO of Escient Inc. in Indianapolis.

Brenda K. Beach, BA’85, works as a senior applications consultant for Wise Consulting. She lives in Pekin, Ind.

William W. Wang, MS’86, serves as director of information technology at the IU Bloomington School of Music. He recently earned certification from Microsoft Corp. as an MCSE on Windows 2000. He lives in Bloomington.

Nii Nii A. Armah, BA’87, is the lead technical architect for Aegon USA in Louisville, Ky., where he lives. He is “really appreciating all I learned as a computer science student at IU.”

Elizabeth R. Basham, BA’87, was promoted to full professor of computer information systems at the DuPage campus of DeVry University in Addison, Ill.

In January, Dirk D. Huck, BA’88, retired from the Air Force at the rank of major after 23 years of active duty. He lives in Leesburg, Va.

Craig R. Sheerin, BA’89, has spent the last year working in Tokyo and Sydney and “misses those Midwestern sensibilities.”

Daniel J. White, BS’95, and Robyn White welcomed their first child, Carson Joseph, on Aug. 9, 2001. White writes, “We can’t wait to take him to his first IU basketball game!” He is principal for American Management Systems in Birmingham, Ala.

Jack Y. Duan, BS’97, works at Sun Microsystems and also teaches at San Jose State University. He lives in Sunnyvale, Calif.

1990s

Jodi S. Wood, MM’91, MS’95, and her husband, Peter, DM’00, celebrated the birth of their son, Stephen, in June 2001. She teaches horn at Dordt College and is principal horn for the Northwest Iowa Symphony and assistant principal horn for the Sioux City Symphony. They live in Sioux City, Iowa.

Michael R. Rosen, BS’92, has spent the last year working in Tokyo and Sydney and “misses those Midwestern sensibilities.”

2000s

Kathryn J. Wise, BA’01, started graduate school in fall 2004 and is pursuing a PhD in economics at the University of Washington. She can be reached at kjwise779@hotmail.com.

PhDs, 2002–04

- Venkatesh Choppella: August 2002, “Unification Source-tracking with Application to Diagnosis of Type Inference”; associate professor, Indian Institute of Information Technology, Kerala, India
- Peter Dudley Drake: August 2002, “The Origins of Number: A Computational Account”; assistant professor of computer science, Department of Mathematical Sciences, Lewis & Clark College
- Catharine M. Wyss: August 2002, “Relational Interoperability”; assistant professor of informatics/computer science, Indiana University
- Philip Chi-Wing Fu: December 2003, “A Visualization Framework for Large-Scale Virtual Astronomy”; from January to June 2004: software developer, Beijing Digital Planetarium Project, Silicon Graphics Inc., Hong Kong; July 2004 to present: assistant professor of computer science, Hong Kong University of Science and Technology, Hong Kong
- Todd L. Veldhuizen: May 2004, “Active Libraries and Universal Languages”; postdoc, Chalmers University of Technology, Sweden
- Stephen A. Hockema: June 2004, “Perception as Prediction: Ramifications on the Acquisition and Representation of Dimensions”; postdoc in psychology, cognitive development, Indiana University
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