

FACULTY PROFILE

Paul J. Wagner

Dr. Paul J. Wagner joined the CS Department in the fall of 2002, the first new hire resulting from the state supported Chippewa Valley Initiative. Paul has a total of five advanced degrees. He received a



B.A. in Philosophy from the UW-Madison in 1977, and a J.D. also from UW-Madison in 1981. After

practicing law in Eau Claire for two years, Paul returned to school and received a B.A. in Computer Science from our very own program at UW-Eau Claire in 1985.

He then completed his M.S. (in 1990) and Ph.D. in 2001 from the University of Minnesota, both in Computer Science. He is an expert in database systems, and has additional experience and interests in web-based applications, software engineering, and computer security.

Paul was born and raised in the Milwaukee area. He met his spouse Cindy while teaching folk dancing at a winter recreation workshop in Minnesota. Paul and Cindy are both avid cyclists and folk dancers, and Paul is a committed distance runner, having run 6 marathons. Paul also worked full-time as an instructor at UW-Stout teaching Computer Science while he pursued his graduate work at the University of Minnesota. So, he joins the UW-Eau Claire faculty with over twelve years of teaching experience!

Paul has a variety of teaching interests including database systems, data structures, problem solving and software development in C++ and Java, software

design and analysis, computer security, and web programming. He also is enjoying the opportunity to develop his research interests in the Department. He is working on a open source database benchmarking project (with student Justin Sabelko), has submitted two papers and one panel proposal (co-authored with fellow faculty at UWEC, the University of Minnesota and Macalester College) on database system and computer security issues to the ACM's national conference on computer science education (SIGCSE), and is currently working on two additional papers on database system operators and database security.

Paul is a welcome addition to the Department, and is highly regarded by his colleagues. Tom Moore said of him, "Paul is an exceptional guy. We call him 'marathon man' since he's run the Boston Marathon, and also will no doubt have a large and lasting impact on our students and our computer science program."

BITS AND BYTES

COMPUTER SCIENCE NEWSLETTER



November 2002

\$4.5M Gift Designated for Computer Science Program

David and Marilyn Karlgaard of Fairfax, Va., have committed \$4.5 million - the largest financial gift announced to date by a Wisconsin public regional university - to UW-Eau Claire's Fulfilling the Promise of Excellence campaign, UW-Eau Claire's first comprehensive fund-raising campaign and the largest such effort by a UW System regional institution. The Karlgaards, both natives of western Wisconsin and both of whom attended UW-Eau Claire, have established a \$4.5 million charitable trust designated for the Karlgaard Excellence in Computer Science Program.

"We are thrilled at the kindness and thoughtfulness of the Karlgaards for making the decision to give back to their alma mater," said Carole Halberg, UW-Eau Claire Foundation president. "This is our first multi-million-dollar campaign gift, and it is a transformational gift for both the computer science department and the university. It is also an indication of the strong level of support we have from our alumni as we approach the public phase of our campaign."

"We are very grateful to the Karlgaards for their generosity," said Andrew Phillips, computer science department chair. "This gift will have a lasting impact on our department. We share their aspirations for our department and this institution. We will do everything possible to meet, and hopefully exceed, their expectations."

David Karlgaard, a Rice Lake native, graduated from UW-Eau Claire in 1967 with degrees in math and physics. He is co-founder, CEO and president of PEC Solutions Inc., an Internet technology

(continued on page 3)

Letter from the CS Department Chair

I recall writing our annual newsletter at about this time last year and thinking to myself that it would be hard to match all the great things that had happened to us in the previous twelve months: ABET accreditation, Outstanding Teaching Department nomination, Chippewa Valley Initiative, etc. Boy was I wrong. If you thought things looked bright last fall, wait until you read the items in this newsletter! Regardless of whether you're an alumnus, a local industry partner, or just a friend of our program, you'll probably need to sit down before you read the next paragraph.

In this issue, you'll discover that our Computer Science Department is the designated recipient of a \$4.5M charitable gift, on top of the recent \$4M state supported Chippewa Valley Initiative. No - that wasn't a typo - a \$4.5M gift designated to the Computer Science program to support and enhance excellence in computer science education. You'll discover that we've partnered with the Mathematics Department and landed a National Science Foundation supported student scholarship program, locally

called EMACS, the first such award to a UW System school in the State of Wisconsin. You'll discover that we've designed and built a new state of the art Software Design Lab to support advanced group collaborative projects in software engineering. You'll discover that two of our students received honorable mention at the UW-Eau Claire Research Day in April for their research work on DNA computing. And you'll discover that we've added Dr. Paul J. Wagner to our faculty, the first of two or three hires we expect to make as a result of the Chippewa Valley Initiative. And while I decided not to include a full article on it this year, we were once again UW-Eau Claire's nominee as the Outstanding Teaching Department within the entire UW System.

I hope you enjoy this newsletter - I sure am proud of its contents. And I hope you'll help us spread the word about the many great things happening here in CS at UW - Eau Claire. We're proud of our program, and we hope you feel the same.

Best wishes for another great year. Andrew Phillips



Nonprofit U.S. Postage PAID Permit No. 219 Eau Claire, WI

University of Wisconsin-Eau Claire 105 Garfield Avenue • P.O. Box 4004 Eau Claire, WI 54702-4004 Computer Science Department 102-1105



## Students Receive Research Day Award

Michael D. Lemay, a junior Computer Science major from Eau Claire, and Matthew C. Meyer, a senior Computer Science major from Stevens Point, received an honorable mention in the sciences for their poster presentation at the UW-Eau Claire Student/Faculty Collaborative Research Day held in April 2002. Michael and Matthew, working with faculty mentor Dr. Michael Wick, presented their research findings on a project entitled "DNA Computing."

The student's project was to develop a computerized simulation of a DNA computing engine, an exciting new area of nonstandard computing that focuses on using biological experiments (involving DNA) to solve very difficult computational problems. The binary infrastructure used by today's computing machines are radically different than those used by the human brain, and there are many aspects of human problem solving that have never been reproduced by computerized approaches. DNA computing, however, is based on the kind of massive parallelism that is present in the human brain and offers considerable potential for exhibiting behavior similar to that observed in human problem solving. In fact, recent advances have shown that DNA computing is capable of producing highly efficient solutions to problems for which no polynomial algorithm is known to exist.

By simulating a DNA computing engine, the students were able to identify problem representations that will allow important phenomena from human problem solving to be recreated in computerized problem solving for the first time. Michael and Matthew earned their honorable mention by presenting a poster that showed how the design and implementation of a DNA computing simulation framework would serve as a problem-solving system for a variety of classic optimization problems.

## Computer Science & Mathematics Receive National Funding

The Department of Computer Science and the Department of Mathematics at the University of Wisconsin-Eau Claire have received a \$400,000 grant from the National Science Foundation to develop the Excellence in Mathematics and Computer Science (EMACS) Scholarship Program. Beginning with the 2003-04 academic year, the initiative will provide 30 students - new freshmen or currently enrolled students who major in mathematics or computer science, and demonstrate financial need and academic potential - with scholarships and opportunities to enhance and financially support their academic programs. In addition to scholarships of up to \$3,125 per year (renewable for up to four years), EMACS scholars will receive support in the form of faculty and peer mentoring, student/faculty research projects, capstone and independent study opportunities, career counseling that includes preparation for graduate school, and service-learning and internship opportunities.

The EMACS program was funded through the NSF Computer Science, Engineering and Mathematics Scholarship (CSEMS) Program, which funds scholarships for academically talented, financially needy students, enabling them to enter the high-technology workforce. UW-Eau Claire is the first UW System school to

receive a NSF Computer Science, Engineering and Mathematics Scholarship Program federal grant.

"This grant award is further recognition that UW-Eau Claire's mathematics and computer science programs are among the best of the best," Provost Ronald Satz said. "This initiative will allow us to build on our already exceptional programs and provide opportunities

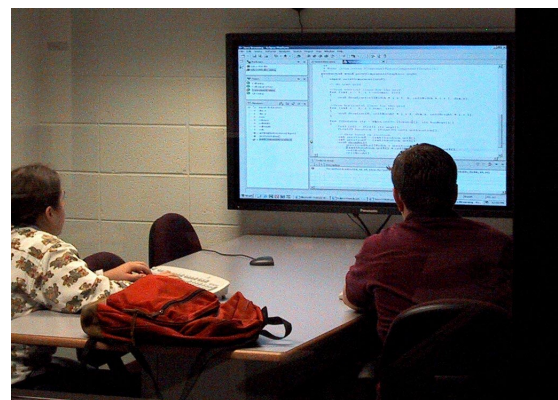
to even more high-achieving students." When awarding the grant, the NSF reviewers noted UW-Eau Claire's outstanding faculty and academic programs, the quality of its mathematics and computer science programs, and the overall excellence of the university. The reviewers also cited the importance the university places on student-faculty research.

In addition to the \$400,000 provided by the NSF, the UW-Eau Claire Foundation has committed to raise an additional \$100,000 to support students who receive funding from the NSF program, said Carole Halberg, president of the Foundation. By promoting the NSF support in its fundraising efforts, the Foundation can pursue additional funding from alumni, regional employers and emeriti faculty, Halberg said. "We will take this opportunity to ask that these sources support the EMACS program long after the completion of the initial NSF funding," she said.



## New Computer Science Software Design Lab Opens

As a result of the state funded Chippewa Valley Initiative, the Department of Computer Science unveiled its new Software Design Lab (SDL) in Phillips Science Hall room 177 at the beginning of the fall semester 2002. The SDL is designed to recreate an industry-style software engineering setting for team-oriented group software design projects emphasizing



(continued on page 3)

## \$4.5M Gift Designated for Computer Science Program

(continued from page 1)  
consulting firm headquartered in Fairfax, Va., and an adjunct professor at The George Washington University. Marilyn Karlgaard, a Viroqua native, attended UW-Eau Claire from 1965-68. She is a retired human resource administrator.

"Education has always been important in our lives," said David Karlgaard, who went on to earn two master's degrees and a doctorate following graduation from UW-Eau Claire, while Marilyn Karlgaard earned both a bachelor's and a master's degree. "It's the way anybody can rise up and be successful in life." David Karlgaard cited an attachment to UW-Eau Claire as one reason behind the decision to make the gift to the UW-Eau Claire Foundation. "The campus there was a big part of our lives when we were that age," he said, noting that he and Marilyn met and fell in love while students at UW-Eau Claire. "Also, my professional career got off to a great start there."

Karlgaard said two factors led to the decision to direct the gift to the computer science program. First, the computer science department, which did not exist when he attended UW-Eau Claire, has established a strong program, he said. "Adding support there can take the department to new levels of greatness. We'd like to be a part of that." Second, computer science played a significant role in his education and career. "Computer science has been so important in my professional career," he said. "Every job and educational experience I've had has been related to computer science in some way. I feel a responsibility to support the field."

The Karlgaards' gift will provide support to the computer science program in three main areas, Phillips said. First, the Karlgaard Excellence in Computer Science Faculty Award Fund provides financial incentives to faculty. "What is

especially unique about this incentive is that the Karlgaards wanted to make it clear that excellence based on teamwork and collaborative efforts is to be valued



most highly," Phillips said. "They chose not to reward any single faculty member with an endowed chair the way many institutions do, but instead to reward any number of faculty who succeed in their pursuit of excellence in computer science education."

Second, the Karlgaard Computer Science Scholarship Fund will provide scholarships for students who maintain high academic achievement and who collaborate with faculty on computer science research that results in scholarly publications. Karlgaard Scholars will be eligible for up to four years of full tuition and fees support, and the Department expects to award about twelve such scholarships annually, to both incoming freshman and returning students. "We intend to use the Karlgaard Scholars funds to attract and retain the very best students in computer science," Phillips said. "It want to compete for the best student talent in our region, and to make a financial commitment to ensure the success of those students as they progress through our program."

Third, the gift challenges the computer science department to seek external funding for laboratory hardware and software. The Karlgaard Computer Laboratory Fund provides funds for computer lab support in the form of a one-to-one match with support obtained from external sources, such as private industry and government grants. "Supporting a high-quality computer science program is an expensive proposition," Phillips said, "and the Karlgaards have established a means for us to maintain that quality by doing what we already

know we must do: partner with local industry."

Phillips said those in the computer science department are excited by the challenge put before them through the Karlgaards' gift. "The Karlgaards have set specific goals for us, all based on providing excellence in computer science education," he said. "We have an opportunity to do what we most want to do, and that is to press forward as leaders in computer science education by creating the most dynamic, exciting and cutting-edge computer science program around."

(continued from page 2)

## New Computer Science Software Design Lab Opens

industrial applications, professional research and development tools, and group collaborations. The lab was funded by \$120,000 from the Chippewa Valley Initiative and is specifically designed to provide students with hands-on experience using professional software tools of interest to local industry employers.

The lab contains four separate group work rooms each containing a Pentium 4 based system, wireless mouse and keyboard, and 53" wall mounted plasma display screen. In addition, each room contains an Interlink Electronics FreeBeam whiteboard that continuously captures writing on a whiteboard and transmits the image over a wireless connection to the PC. Well-suited for brainstorming sessions and group meetings, the electronic whiteboard system saves on note-taking and preserves a quickly reproducible record of time spent in the conference room.

Outside of the four work rooms are another twelve Pentium 4 systems with flat panel monitors for additional group work in small teams. Each system is configured with access to a variety of industry standard tools, including the WebSphere Application Suite and Oracle, for software design and development. Students enrolled in the software engineering curriculum will therefore benefit from group collaborations and research projects using the same computing equipment and software currently applied in the software design industry.