A record number of attendees turned out for the 12th annual Business Best Practices and Emerging Technologies Conference, hosted Sept. 30 at the Monona Terrace Convention Center by the UW-Madison E-Business Consortium (UWEBC). Members of the media joined consortium members to hear a talk by a Google executive who is the youngest woman ever included on the Fortune Most Powerful Women list. Marissa Mayer (pictured), vice president of search product and user experience at Google, discussed creating an organizational culture of innovation and how such a culture developed at Google. In addition to giving the conference keynote address, Mayer, who grew up in Wausau, Wisconsin, and was the first female engineer to join Google, received the 2010 Distinguished Fellow Award from the UW-Madison E-Business Institute, the research-oriented counterpart to the industry-focused consortium. The award is presented annually in honor of achievements and advancements in information technology and e-business.

"You can take the girl out of Wisconsin, but you can’t take Wisconsin out of the girl,” says Mayer. “I’m honored to be recognized with a distinguished fellow award by the University of Wisconsin. Having grown up in Wisconsin puts UW-Madison on the map for driving research."—John Lee

There’s only one place in Wisconsin where a driver can send text messages, speed, or engage in other risky behaviors with no risk of an accident: the new UW-Madison Driving Simulation Laboratory. Drivers not only are certain to survive the experience, but the consequences of their actions could be safer vehicles and roads around the country and even around the world.

The driving simulator, located in the Mechanical Engineering Building, addresses a substantial need to test new vehicle technologies and road infrastructure quickly, says its founders, John Lee, the Emerson Electric Quality and Productivity Improvement Professor of Industrial and Systems Engineering, and Civil and Environmental Engineering Associate Professor David Noyce, who also directs the Wisconsin Traffic Operations and Safety Laboratory.

In 1970, no software code was used in vehicles. Now, a vehicle can have millions of lines of code in just its navigation system. “Vehicles are getting smarter, and we need to get ahead of that rapid change to understand how drivers respond to the technology,” says Lee, an expert in driver distraction. “The fundamental reason for the simulator is to understand how people respond to technology so we can design it better and save lives. The car is designed from the ground up to be the car of the future and something we can use to develop and test next-generation vehicle technology and road infrastructure.”

Funded by UW-Madison and the Wisconsin Department of Transportation, the simulator includes a Ford Fusion with a 24-foot screen wrapped around in front and an additional screen behind the car. Six projectors cast a virtual driving environment on the screens, immersing a driver in as much as 270 degrees of simulation.

The projectors are unique because they render images at the same resolution the human eye does. This allows researchers to, for example, project signage exactly as it would appear to a driver on a physical road. Additionally, the simulator is motion-based and capable of one degree of movement in any direction, which further enhances the realistic experience of driving the simulator.

(Continued on back page)
MESSAGE FROM THE CHAIR

I am honored and humbled to have been selected as the incoming chair of the UW-Madison Department of Industrial and Systems Engineering. In particular, in a time of difficult economic circumstances, it is encouraging to be chair of a department with a healthy research enterprise. For example, in the recently released review of doctoral programs performed by the National Research Council, the department ranked highly with regard to the average number of citations per publication (a good measure of research quality), and also the average number of research awards per faculty member and the number of PhDs granted (good measures of the size of the department’s research enterprise).

I’m also pleased to be benefiting from the initiatives undertaken by Patti Brennan as outgoing chair, Carol Anne Krueger as the department’s administrator, and Pam Peterson as our student-services coordinator. In particular, Patti devoted a great deal of effort and thought to helping the department function more efficiently and transparently, so that faculty members have a say in how the department is run, without needing to spend undue amounts of time in committee meetings. Working together with Carol Anne, Pam and the rest of the department’s staff, she also ensured the department continued to function smoothly even in a time of rapid change.

Finally, under Patti’s guidance, the department was able to successfully recruit a number of new faculty members to join our enterprise. This is obviously crucial to the future health of the department. Achieving this during a time of tight and even declining budgets is a real testimonial to Patti’s leadership, and to the respect with which the department is viewed by everyone from potential faculty candidates to college administrators deciding how to allocate scarce faculty positions among departments.

On the teaching side of our enterprise, a number of the courses we offer have become attractive electives to engineers from other majors. This is most especially true of ISyE 313: Introduction to Engineering Economics, which this semester has well over 100 students enrolled. That is a gratifying endorsement for the usefulness of the course, which deals with the mathematics of interest rates and discounting—something that I am confident will be beneficial to students not only in their engineering careers, but also in making their own economic decisions about things like car loans, mortgages and planning for retirement.

I look forward to interacting with many of you over the next few years in my new role as department chair. In the meantime, I would like to wish all of you a good new year!

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On September 17, UW-Madison Chancellor Carolyn “Biddy” Martin visited the department. Martin met with ISyE leadership and College of Engineering Dean Paul Peercy (top right) and toured the UW RFID Lab (bottom right) and Driving Simulation Lab. She also learned more about research by Associate Professors Jeff Linderoth and Shiyu Zhou and Assistant Professor Enid Montague.

The chancellor sat down with 12 ISyE students (left) to hear their perspectives on the department. “We spoke a lot about our professors. They’re why the department is so good, and Biddy took that pretty seriously,” says undergraduate student Anna Nachamie.

After the discussion, Martin extended an invitation to the students to visit Olin House before the next day’s football game against Arizona State and watch the game from the chancellor’s box. “We did ‘Varsity’ with her and ‘Jump Around,’” says undergraduate Yodsadhorn “Fudge” Vinitwatanakun, referencing popular student game day traditions. “She has a really great personality.”

Nachamie agrees. “She’s so integrated with students, even though this is a big school, and it’s encouraging that she’s so involved,” she says.
A UW-Madison doctor who has long worked to increase the entry of women into the scientific workforce has won a grant to develop video games to uncover and neutralize implicit, unintentional biases against women, minorities and people with disabilities.

Although women have made major strides in medicine and the social sciences, they lag in engineering and physical sciences, and the fallout affects not just fairness but also economics, says Molly Carnes, director of the UW-Madison Center for Women’s Health Research and a professor of medicine and industrial and systems engineering. She says even people who favor diversity and resist bias may unintentionally act upon implicit bias.

The new grant, called the National Institutes of Health Director's Pathfinder Award to Promote Diversity in the Scientific Workforce, is funded by the American Recovery and Reinvestment Act and administered by the National Institute of General Medical Sciences.

The three-year, $2 million grant will fund several researchers and students to work with Carnes and collaborators to develop an interactive video game that will place faculty in situations where they can recognize the self-defeating nature of implicit bias. For example, a faculty member might be asked to hire a top scientist from another university and schedule an accessible campus visit to Madison for the candidate, who needs a wheelchair.

The grant is intended to fund what Carnes, who also co-directs the UW-Madison Women in Science & Engineering Leadership Institute, calls “transformational approaches” that can change attitudes, beliefs and behaviors in academic institutions. In her studies of implicit bias, Carnes says she focuses on faculty, who are the drivers of change in an academic institution. She says she approaches implicit bias in decision-making as a bad habit that can be changed with practice.

Working with the Games & Simulation for Learning group on campus, Carnes is examining existing games for elements that would engage faculty in a game that involves authentic situations with meaningful outcomes. After the game is distributed across campus, Carnes and her colleagues will look for results in an all-faculty survey planned for 2013, which will enable a comparison of attitudes between people who have played the game and those who have not.

“The ultimate test is a change in hiring practices and faculty retention on campus. Based on our previous work, we are optimistic that this work can increase the diversity of the faculty at UW-Madison,” Carnes says.


E-business conference (Continued from front page)

Wausau, earning this distinction in my beloved home state is very special to me. I’m excited to support the UWEBC and their business community.”

Wisconsin-based executives and managers made up the majority of the more than 500 people registered for the conference. The annual conference is a unique opportunity for business community members to meet and discuss innovative practices and emerging technological trends in marketing and customer experience, information technology, and supply chain management.

Colony Brands (the parent brand of The Swiss Colony) social media analyst Marivic Valencia, who attended the conference for the first time this year, says she found the speakers and presentations valuable. “Different departments see and hear the same message. For example, since the Internet manager and I both attended the ‘contextual behavior’ presentation, we could theoretically apply that in a way that integrates Internet and social media,” Valencia says. “For me, it was also nice to network with other people and companies I know.”

Founded in 1998, the UWEBC is very active with more than 50 meeting opportunities each year for its 65 member organizations, which include a wide range of leading Wisconsin companies. The consortium has a unique member-to-member advising service and facilitates collaboration with UW-Madison faculty and students. “The UWEBC is a unique university-industry partnership that truly embodies the Wisconsin Idea,” says Professor Raj Veeramani, executive director of the consortium. “Since its inception, the consortium has served as a trusted collaborative learning community for companies to learn and share business best practices and innovative applications of emerging information technologies. Our annual conference, which features an exemplary group of thought leaders and experts, is just one of many ways in which the consortium helps Wisconsin businesses stay on the leading edge.”
A new kind of research center opened its doors on the UW-Madison campus in early December 2010. The Wisconsin Institutes for Discovery combines the Morgridge Institute for Research, a private facility, and the Wisconsin Institute for Discovery (WID), a public research facility, under one roof and brings together scientists and researchers from a broad spectrum of disciplines. ISyE Professor Patricia Flatley Brennan was selected to be one of five UW-Madison faculty whose research proposals will establish WID. This group was selected via an intensely competitive process.

How do you manage your personal health information? From a shoebox? An expandable folder? Your doctor’s new Web-based software?

One of the nation’s few nurse-industrial engineers thinks both individuals and health systems can manage care better if they had better technology. And she’s leading a national effort to come up with a vision for personal health records that will go far beyond the current crop of ideas for helping people make decisions about their own health.

“We have to think bigger, and figure out how to take full advantage of the amazing new opportunities technology is providing,” says Professor Patricia Flatley Brennan, who is also a professor in the School of Nursing. “A truly effective system of managing health information would not just make it easy to collect and store information like blood-pressure readings, medication lists or doctors’ instructions. It would be a very powerful tool to help people accomplish goals and manage chronic health problems.”

Brennan is the national program director of Project HealthDesign, which aims to create a new generation of personal health records. Originally funded by the Robert Wood Johnson Foundation in 2006, the project recently received an additional $5.3 million in funding to continue to explore Brennan’s vision.

Brennan acknowledges that several health-information vendors are moving forward on various versions of electronic personal health records. But her vision, which derives from her role as a nurse and teacher of nurses, is both broader and more patient-centered.

“Project HealthDesign speaks to what is unique about nursing research, which strives to help people find ways to understand and manage their own health,” she says. “The tools that vendors have available now are mostly linked to a health care organization’s medical record or are disease-specific. What we seek to do is come up with tools and applications that can access all sorts of health information that work together to help people reach their health goals in a secure, integrated way.”

Imagine having a tool that keeps track of your accumulated health history—allergies, vaccinations, lab results, etc., that is collected during a typical clinical encounter—plus clinical information passively gathered from you—your blood pressure or glucose level, for example.

Add to that what Project HealthDesign has identified as “observations of daily living”—things that you record yourself and have unique meaning for you: moods, pain or discomfort, events during the day.

Then imagine that the tool is able to integrate all your clinical and observational information, interpret the results and provide useful feedback on which you can act.

“We all develop strategies for managing the different kinds of health information,” says Brennan. “Project HealthDesign is aimed at coming up with entirely new approaches using readily available technology and centered around the patient.”

During the first round of the project, researchers developed prototype tools that did much of the above. In its second round, researchers will focus on how the integrated information can be used in a clinical setting.

“By integrating what happens during a care visit with observations of daily living, caregivers and patients will have a more complete picture of how the patient manages disease,” says Brennan. “We’ve already made a lot of progress in identifying barriers and finding ways to keep the information secure while still giving access to those who need it. Making this happen requires a lot of creative thinking by teams of folks with very different skills. By bringing together technology and healthcare professionals with patient-centered design experts, we are on the way.”

Her WID proposal for the Health Technology Design in the Living Environments Laboratory is aimed at accelerating the development of personal care diagnostic and therapeutic technology to support individuals and families in the detection, recognition and management of health problems. “The Living Environments Laboratory research will help expand Project HealthDesign’s vision of engaging people in managing their health,” says Brennan, “by developing new devices and creative technologies to better understand health in everyday living.”

One focus will be to learn how individuals now access and manage health information at home, and then propose improvements. A second focus will be to find improvements in the many health-care technologies that are moving into the home, where they must be adapted to different circumstances and different users.
The Center for Risk and Economic Analysis of Terrorism Events at the University of Southern California has been re-funded by the U.S. Department of Homeland Security for the next five years with a $15.3 million grant. Professor Vicki Bier is the theme leader for the “Management of risks from intelligent, adaptive adversaries” project. Additionally, Bier is performing research on target-oriented utility theory to produce a method to help risk analysts and decision-makers predict and account for terrorist reactions to proposed risk-mitigation strategies. Bier also is studying how to use the probabilistic inversion method to mathematically rank attacker objectives, which could help quantify uncertainty about what attributes are important to terrorists—even if those attributes are unknown to defenders.

Alfonso Gutierrez, director of the UW RFID Laboratory and director of research and education at the UW E-Business Consortium, has been elected an active member of AIDC100, an international organization of automatic identification and data capture (AIDC) professionals who have contributed significantly to the growth and advancement of the industry. Only 100 people worldwide are recognized as AIDC100 active members. Gutierrez was recognized for his leadership in the UW RFID Lab, which has garnered international recognition, and for significantly advancing the knowledge and application of AIDC technologies in various industries via innovative, multidisciplinary university-industry partnerships and research projects.

Associate Professor Ben-Tzion Karsh represented Wisconsin at the second Frontiers of Engineering Education symposium, hosted by the National Academy of Engineering. Karsh is one of 53 engineering educators selected to participate in the symposium, which brings together early-career faculty members who are developing and implementing innovative educational approaches in a variety of engineering disciplines. The symposium was held Dec. 13-16 in Irvine, California.

Hy-Vee Inc. has awarded a $220,481 grant to Associate Professor Ananth Krishnamurthy (pictured) and Professor Raj Veeramani for a research project on automation and optimization of distribution center operations. The project will establish an evaluation framework and analytical models to gain fundamental insights into the impact that automation can have on the performance of distribution operations at the center level and the entire distribution network.

In August, Professor John Lee was featured on the Wisconsin Radio Network. Lee spoke at a national distracted driving summit in September, addressing the consequences and trends of distracted driving. Read more and hear the interview at http://bit.ly/cAhjUU.

Assistant Professor Enid Montague presented a keynote speech and workshop at the Brazilian Ergonomics Congress and the Latin American Ergonomics Congress, which was held August 2-6 in Rio de Janeiro. Montague discussed trust as a mechanism for macro-ergonomic sustainability.

Professor Leyuan Shi has been named an IEEE fellow, one of the most prestigious IEEE honors. Given to a select group of recipients after a rigorous evaluation procedure, the grade of fellow recognizes significant research contributions. Shi was recognized for contributions to nested partitions optimization methodology.

Professor Emeritus Rajan Suri, the founding director of the Center for Quick Response Manufacturing, was inducted into the 2010 IndustryWeek Manufacturing Hall of Fame. The hall of fame recognizes the top 10 individuals who embody the best of U.S. manufacturing. Suri is part of a lineup of industrial superstars who have had a considerable impact on manufacturing worldwide. Suri joins Michael Dell, founder of Dell Computer, and Rich Teerlink, the past chairman and CEO of Harley Davidson. Previous inductees include Apple’s Steve Jobs and Lee Iacocca, the former president of Chrysler who served during the company’s revival in the 1980s. Learn more at www.engr.wisc.edu/news/archive/2010/2066.html.

Associate Professor Doug Wiegmann, in collaboration with researchers at Cedars-Sinai Medical Center in Los Angeles, California, has been awarded a two-year $2.1 million grant from the U.S. Department of Defense for a project to design the operating room of the future. The project will involve studying trauma surgery teams and simulation-based scenarios to design and evaluate interventions for improving team performance and surgical outcomes. The project is renewable for an additional four years for a total of $6.3 million over six years.

Professor Gregg Vanderheiden, who directs the Trace Research and Development Center, was quoted recently in national newspapers on assistive technology advances and opportunities. The New York Times and Chicago Tribune included comments from Vanderheiden in articles about how Apple iPads are used by children with disabilities. Read the Times article at nyti.ms/crahLu and the Tribune article at bit.ly/cm02xd.

Professor Raj Veeramani and Civil and Environmental Engineering Professor Marc Anderson have received a one-year, $100,000 grant from the National Science Foundation to supplement more than $600,000 in existing funding for their Partnership for Innovation in Wisconsin’s Packaging and Printing Industry grant. The additional funding will support a collaborative project with Seneca Foods to develop and apply inorganic thin-film nanoporous oxides as benign coatings in the food canning industry. The coatings would replace current organic coatings, such as bisphenol-A, that pose health and environmental concerns.
In summer 2010, Jingshan Li joined ISyE as an associate professor. With a background in manufacturing and industrial partnerships, Li’s work is a blend of real-world practicality and a commitment to quantitative production principles.

Originally from China, Li received his PhD at the University of Michigan, Ann Arbor, and spent six years at the General Motors Research Lab. He returned to academia as a joint faculty member in electrical and computer engineering and manufacturing at the University of Kentucky for four years before joining UW-Madison. “UW is a very good school with faculty working in manufacturing in many different subfields. Wisconsin itself has a lot of manufacturing activities as well,” he says.

Li’s work focuses on discovering principles and developing rigorous methods for production systems engineering and operations management, like the scientific methods used in other engineering fields.

“Traditional manufacturing methods are typically based on philosophies and qualitative principles,” he says. “My method is about trying to discover the nature of system operations and develop models to describe that nature and then derive solutions.”

Li outlined his philosophy in the textbook *Production Systems Engineering*, published by Springer in 2009 (co-authored with Semyon Meerkov from the University of Michigan).

His approach is to develop analytical solutions for productivity and quality improvement. An example is Li’s recent National Science Foundation Grant Opportunities for Academic Liaison with Industry (GOALI) project with General Motors.

Li developed a scheduling and control policy for the auto paint shop, which improved shop quality and reduced shop energy consumption by around five percent. This translates to an average of $500,000 in energy cost savings per year. A paint shop consumes more than 60 percent of the total energy consumption in a typical auto plant.

The GOALI grant isn’t Li’s only energy-related project. He is part of a Department of Energy-sponsored initiative to support the development of a battery manufacturing plant in the United States. Li is working with General Motors to develop a quality-control system for this kind of plant, which is critical since the battery of an electric car makes up a significant portion of the vehicle’s cost.

Li also is applying production-engineering principles beyond traditional manufacturing businesses. He has worked with a wide range of industries, including hospitals. “There are similarities between manufacturing and healthcare,” Li says. “The auto industry is about part flow. In a hospital, you look at patient flow.”

Emergency room overcrowding is an issue in hospitals nationwide. Li is working on a method to improve patient flow via improved equipment and staffing policies, which could then be extended to other hospital departments. Among other issues, he is looking at nurse scheduling, pharmacy and oncology operations, and patient safety in acute care.

**Focus on new faculty**

**Jingshan Li**

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**UP-CLOSE WITH THOMAS YEN**

**Thomas Yen** is manager of the ISyE Flexible Manufacturing Cell (FMC) Teaching Lab, where he introduces students to computer-integrated manufacturing, assists faculty with curriculum development, trains teaching assistants, and teaches lab classes. He is an assistant manager of the UW-Madison RFID Lab and operations manager of the Ergonomics Analysis & Design Consortium. Yen also is an instructor in the Department of Biomedical Engineering and the manager of the Bioinstrumentation Teaching Lab (BTL). “I encourage faculty and students to use me as more than a lab manager as someone who can assist them with all aspects of their teaching and research needs,” Yen says.

**Q** What brought you to UW-Madison?

**A** My affiliation with ISyE began in graduate school where I received my PhD in human factor and ergonomics. I worked in ISyE for several years as a scientist and instrumentation innovator before moving to BME, where I continued to conduct research in human factors. About two years ago, I became more involved in teaching and the management of the BTL. During this time, ISyE was looking for someone to manage the FMC lab. I accepted this as an opportunity to return to my interest in computer-based automation and robotics.

**Q** What are some of the things students learn from you?

**A** I’m one of the instructors for the BME design course, where we teach students the engineering design process. The success of a design is not simply that it does what it was designed to do, but also that the operator can use it with the least amount of errors and difficulty. My area of focus is in the design and evaluation of the user interface that can produce the most efficient operation with the least amount error.

**Q** What are some of the most common instrumentation design challenges students face?

**A** The most common challenge I see is teaching students not to over design. With so many design software and tools available, it is very easy for students to explore and produce very elaborate designs. The students often forget economic and manufacturing constraints. I make it an important part of their education to remind them that a simple design is sometimes the most elegant approach.

**Q** How do your various roles in the College of Engineering complement each other?

**A** The same approach and process can be used to find a solution, but the application of the solution must be tailored for the target group. There is definitely a complementary synergy in my work with the consortium and teaching labs. What I learn and experience with one group can benefit and improve the outcome for the other group. Nothing is wasted. This is why I love my job.
At the 2010 National Human Factors and Ergonomics Society (HFES) annual meeting, held in San Francisco, California, in late September, the newly re-formed UW-Madison chapter was awarded a silver-level outstanding student chapter award.

The award, given to only a few college chapters each year, recognizes the UW-Madison chapter’s community outreach, information dissemination campaign and high level of student involvement during the past year.

Chapter president and ISyE PhD student Sacha Duff was instrumental in reorganizing the chapter after it lapsed into a brief hiatus. “For anyone involved in human factors, this society is really important,” says Duff. “I think that having a group like this is important for students looking to further their studies in human factors or ergonomics.”

As Duff learned, however, re-starting a student organization was not an easy task. “There were a lot of administrative tasks that we had to complete before we could become a student organization,” says Duff. “But the club received an enthusiastic welcome from the College of Engineering and ISyE faculty. They showed a lot of support by allowing us to make announcements in lectures, offering sponsorships and generously giving their scarce personal time to attend a meeting.”

In particular, Assistant Professor Enid Montague closely advised the group. “Enid was really supportive in getting everything started this year,” explains Duff. “She has helped us get a lot of speakers and understand all the inner workings of running a chapter.”

In addition to hosting numerous speakers, the HFES chapter hosts webinars, advising sessions and various social events. “We had an action-packed, fun-filled and productive semester,” says Duff. “We’re really proud of everything we’ve accomplished.”

Currently, the chapter has more than 20 active members. Most are ISyE students, though the organization is open to any student interested in human factors. “We’re really hoping to cast our net a little wider and get a lot of different degree programs represented in the club,” says Duff. “We’d also love to get more undergraduate students involved.”

Alumnus receives National Institutes of Health award of merit

Neeraj K. Arora (MS ’98, PhD ’00) received a National Institutes of Health Award of Merit from National Cancer Institute Director Harold Varmus on Nov. 4. The award recognizes Arora’s work in patient-centered cancer care as a research scientist and program director at the National Cancer Institute Applied Research Program. Arora is leading efforts to build a research program to assess, monitor and improve cancer patient care. For more than 12 years, Arora’s research has integrated health communication, outcomes research, and cancer survivorship. His expertise includes assessing patient-reported outcomes, such as patient experiences and satisfaction, information needs and health-related quality of life, as well as studying the impact of patient-clinician communication.

Arora also is a long-term cancer survivor. In 1994, while still a student at UW-Madison, he was diagnosed with non-Hodgkin’s lymphoma. “Now, influenced by my training at UW and my personal cancer experience, I head a program of research on patient-centered care with the aim of improving quality of cancer care from the patient’s perspective,” Arora says.

2010-11 ISyE undergraduate and graduate student scholarship recipients

Lewis Raymond Brown Scholarship
Samantha Buchanan, Jacquelynn Lamb, Matthew Leslie, Britta Rowan, Colin Wiesner

Fred W. & Josephine Colbeck Scholarship
Andrew Bray, Elizabeth Dalsing, Claire Davis, Bradley Jacobs, Allison Newman, Erkin Otles, Dain Peer, Allison Scott

Antoinette Derjani-Bayeh Scholarship
Patricia Ferrara

Engineering Undergraduate Scholarship
Marta Bogenschultz, Thomas Davich, Claire Davis, Bradley Jacobs, Clair Linde, Rachel Merten, Anna Nachamie, Bertha Natalia, Russell Peterson, Yodsadhorn “Fudge” Vinltwatanakun

Charles G. Gunderson Engineering Scholarship
Clair Linde

Richards S. & Harriet K. Fein Scholarship
Qiang Zhou

Walter A. Olson Memorial Scholarship
Claire Davis

August & Jane Paschel Scholarship
Rachel Merten

Robert A. Ratner Scholarship
Nicole Domask

Rolan E. Stoelting Scholarship
Jennifer Gerschke

Erich Victor Streich Memorial Scholarship
Bertha Natalia

Anthony & Alice Thistlethwaite Scholarship
Bradley Jacobs, Nanjing Jian, Allison Newman

Richard H. Thomas Family Distinguished Scholarship
Patricia Geisler

Wendel James Witkay Scholarship
Lauren Kern

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Flexible software from Realtime Technologies Inc. combined with the high-end hardware will allow researchers to test a wide variety of driver behaviors and responses, many of which aren’t economically or ethically possible to test on physical roads. For example, drivers could be dosed with alcohol or learn to navigate a new intersection design.

The simulator is likely to directly benefit Wisconsin drivers, as Noyce plans to replicate segments of roads around the state that are known to cause traffic problems and test traffic control solutions for those segments. Noyce also has spearheaded the effort to introduce a flashing yellow turn arrow, which has been implemented at more than 1,000 intersections nationwide, including two locations in Madison. The simulator will help researchers continue to study that and other new signals.

Additionally, national transportation agencies and vehicle industries stand to gain from research on the UW-Madison simulator. Lee and Noyce have collaborators in Detroit, Michigan and Sweden who also may be involved on simulator projects.

Other advanced motion-based driving simulators around the country are prohibitively expensive to operate. The UW-Madison simulator is affordable enough that it will be accessible to researchers of all levels, including undergraduate students. Via class projects, students will help design new vehicle technologies using the simulator’s rapid prototyping software.

“It’s possible for students to get involved and do experiments that can really make a difference and influence the next line of cars,” Lee says. “It’s a really exciting opportunity.”

Lee and Noyce plan to work closely on simulator projects. “Since I joined UW-Madison in 2002, one of my goals since has been to get this type of simulator going,” says Noyce. That goal moved forward when Lee joined UW-Madison in 2009 and the two partnered to develop the simulator. “This will let us expand on our respective knowledge and capabilities as a team,” says Noyce. “The simulator really puts Wisconsin on the map in terms of leadership and research on driver’s issues and behaviors. This continues UW-Madison’s top-ranked reputation in transportation and opens up whole new world of research for us.”