

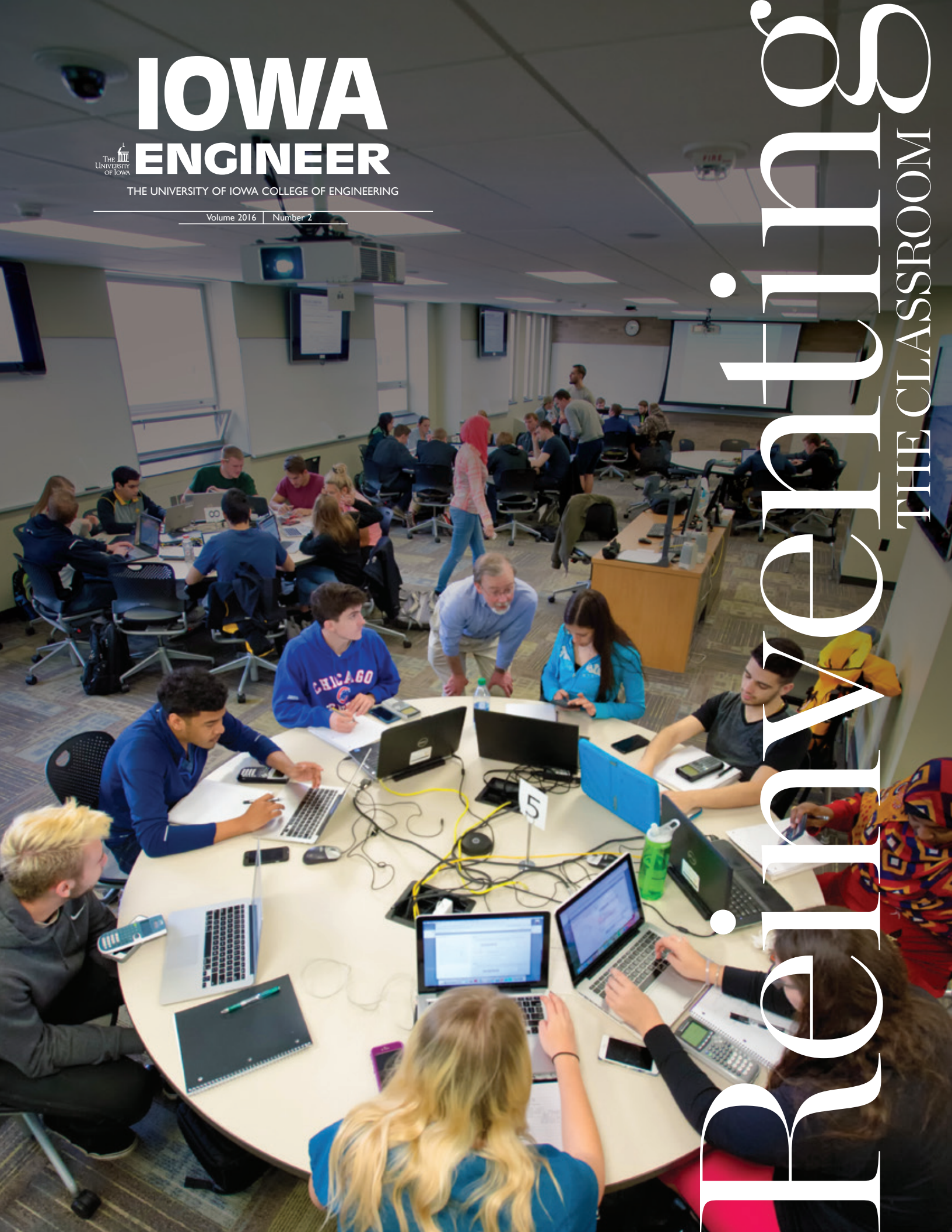
IOWA ENGINEER



THE UNIVERSITY OF IOWA COLLEGE OF ENGINEERING

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Engineering The Classroom



Innovation and Excellence in Teaching, Research and Student Organizations

In this issue of the *Iowa Engineer* you will find stories that describe our excellence and advances on three different fronts: teaching, research, and extracurricular activities through student organizations. I am especially fond of this collection of stories because it helps to capture and display the wide variation in the types of activities that our faculty, staff, and students are constantly pursuing in order to create new engineering knowledge and educate engineers prepared to thrive in the 21st century.



On the research front, you will learn how our faculty, staff, and students are performing cutting-edge research in all areas associated with safer roads and highways, including the rapidly emerging field of autonomous cars. In the classroom realm, you will find a great story that highlights some of the ways that our

faculty are exploring to use technology and the internet for enhancing student learning and creating active-learning “flipped” classrooms. Finally, our thriving collection of student organizations is well represented by a story that highlights the impact that the Society of Women Engineers (SWE) has made on our students, and the impact that our students and alumnae have made on SWE.

As you see, this issue of the *Iowa Engineer* will give you insight into the breadth of activities and the contagious energy that we have on campus. Enjoy the stories, and if they pique your interest, I hope that you will join us on campus for one of our alumni visit days to experience the excitement first hand.

A handwritten signature in blue ink that reads "Alec".

Alec Scranton
Dean of Engineering

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“I WANTED TO FIND A WAY FOR EVERY STUDENT TO TAKE OWNERSHIP OF WHAT HE OR SHE WAS LEARNING, AND NOT JUST APPLAUD SOLUTIONS OFFERED BY OTHERS. SO, BEING AN ENGINEER, I STARTED LOOKING FOR ALTERNATIVES.”

MARK ANDERSLAND, ASSOCIATE PROFESSOR OF ELECTRICAL AND COMPUTER ENGINEERING

Engineers are tinkers by nature. Hand them a gadget, a puzzle, or a problem, and they’ll take it apart, make adjustments, reassemble, and have it working better than ever. Can the same process apply to the college classroom? Figuring out how students best learn in today’s high-tech, hyper-connected world is a puzzle confronting many college educators, particularly since the first massive open online courses (MOOCs) emerged in 2012.

That’s when Keri Hornbuckle, Donald E. Bentley Professor of Engineering and associate dean for academic programs recalls first hearing faculty talk about what MOOCs might mean for the college and the UI as a whole. If every course can be taught cheaply and online to tens of thousands of students, is there even a need for a physical campus anymore? The hype about MOOCs has waned, but interest in new ways of teaching and learning remains high.

“This was a nationwide conversation and it gave Dean Scranton an opportunity to encourage more innovation in the classroom,” Hornbuckle says. “In 2013 we began a faculty luncheon lecture series on this topic. The dean gave the very first presentation and his message was clear. He wanted faculty to understand that classroom innovation shouldn’t be about reaching more students—it’s about using online resources and other technologies to enhance what we have to offer.”

Research has shown that students are better prepared and more engaged when they learn in environments that are interactive or provide a more personalized experience. Among the approaches incorporating these elements is the “flipped classroom.”

TEXT BY
SUSAN SHULLAW

In a typical lecture course, a teacher delivers course content during class time, and students complete projects and other homework assignments on their own, outside of class. In a “flipped” course, the content formerly conveyed during in-class lectures is delivered via web-based instructional video, podcast, or assigned readings, which students are expected to study prior to class. Then, class time is used for group problem-solving, with the faculty member on hand to provide guidance and answer questions on the spot.

FLIPPED ON THE RIGHT FOOT

Associate professor of biomedical engineering Sarah Vigmostad flipped her Statics class in 2012. “I made short podcasts of mini-lectures and problem samples for students, and they were expected to come to class ready to solve problems—not having mastered the material, but at least being familiar with it,” she explains. “During class, students would work in preassigned groups of three, so I could be sure each group had a mix of ability levels to encourage peer teaching and learning.”

Vigmostad reports that she found the flipped model “almost immediately validating,” in part because the problem-solving exercises quickly revealed students’ gaps in knowledge.

“It used to take until the first exam, weeks into the term, before students realized what they didn’t know, and they ask all these questions that should have been raised earlier,” Vigmostad says. “In the flipped class, I started getting those questions on the first day, which was great. It really changed the class dynamic, and got students off on the right foot right away. I feel like my students really enjoyed and benefited from the flipped format.”

Class structure and content clearly make a difference, but setting is important, too. Vigmostad’s flipped Statics class was held in one of the university’s TILE classrooms. These learning spaces, designed to “transform, interact, learn, and engage,” are equipped with circular tables, laptops, flat screen monitors, multiple projectors, and whiteboards to encourage and support collaborative and engaged active learning among students and faculty.

Mark Andersland, associate professor of electrical and computer engineering, also has experimented with the flipped concept and TILE classrooms. In his case, encouragement came both from within and outside the College of Engineering.

Launch of the college’s classroom innovation speaker series in 2013 coincided with a university-wide initiative called the Large Lecture Transformation Project (LLT). Sponsored by the UI Provost and led by the UI’s Office of Teaching, Learning and Technology, the project sought to transform several large courses from traditional lecture-hall formats to hybrid or “blended” deliveries—part online, part in-person—supported by technology.

Andersland teaches what he acknowledges is a somewhat unpopular core course: Electrical Circuits. It’s challenging, it’s



Top: ECE student Henry Sissac and CEE student Grant Hicks collaborate.

Bottom: Andersland helps BME student Monica Kettleson.

required of all undergraduates, and with an enrollment of up to 600 students each year, the course has always been delivered in the familiar lecture-hall format. When Andersland's department chair suggested that Circuits might be a good candidate for the LLT project, Andersland was intrigued.

CIRCUITS AND SPACES

"I'd always lectured the way I'd been taught," says Andersland, "but the class sessions I most enjoyed were exam reviews. Students would come in, I would ask them what concepts were troubling them, and then invite other students to offer their ideas. We were problem-solving together and it was a much more active learning environment, although I wouldn't have described it that way at the time. I just knew it was more fun."

With guidance from Jane Russell, an instructional design specialist in the UI Center for Teaching and leader of the LLT project, Andersland began to look for technological solutions that would make group problem-solving more meaningful. "I wanted to find a way for every student to take ownership of what he or she was learning, and not just applaud solutions offered by others. So, being an engineer, I started looking for alternatives."

Andersland found, and adapted for real-time, classroom use, a web-based homework platform capable of delivering distinct versions of the same for-credit problems to each student's laptop or smartphone, along with instantaneous answer feedback. This turned out to be essential to the flip's ultimate success as it enabled students to simultaneously receive individualized feedback on their work, and it focused student discussions, not on their specific answers, which were all different, but on the successful approaches to arriving at these answers.

In addition, as part of the LLT project, the Circuits course experimented with venue as well as content. Over several semesters, sections of the course were taught in a large lecture hall and in a TILE classroom.

"Not surprisingly," says Andersland, "the flipped course worked best in the interactive classroom, largely because students had room to spread out. In the auditorium setting, it was difficult for students to turn around in their seats and converse with their peers while juggling a laptop, notes and reference materials. And it was difficult for the teacher to easily move around the room and visit the student groups."

Self-reported student surveys showed that performance and engagement increased as the Circuits course moved from the standard large-lecture model, to the flipped model in an auditorium, to the flipped model in the interactive classroom. "Coming to your class is like coming to a study group three times a week," one survey respondent remarked.

"That was meant in the most positive way," Andersland says with a smile. "It was a great reminder that our focus should always be on learning and improving." ■

A FLUID FUTURE

Classroom innovation is a priority for the College of Engineering, the University of Iowa and, as it turns out, the U.S. military.

Pablo Carrica, professor of mechanical and industrial engineering and faculty research engineer at IIHR--Hydroscience & Engineering, and James Buchholz, associate professor of mechanical and industrial engineering and associate faculty research engineer at IIHR, recently received a three-year, \$600,000 grant from U. S. Department of Defense, Department of the Navy, for "Engaging Undergraduates and High School Students in Naval Science & Technology."

Leveraging IIHR's established Naval Hydrodynamics research program and the IIHR Fluids Workshop, the Office of Naval Research grant will help establish an undergraduate program in naval hydrodynamics, provide an experiential learning environment where students will engage in problem-solving exercises with Navy lab engineers, and more.

Like other classroom innovations under way at the college, the grant-funded projects will promote interactive learning. "We've designed our Fluids Workshop to be a collaborative laboratory community," Buchholz cites as an example. "Posing open-ended problems gives students the opportunity to teach and learn from one another."

While the Navy may be most interested in developing its future workforce, Buchholz is just as interested in cultivating a particular mindset. Educational programming that show students what they can do, he says, "helps build a culture of innovation and curiosity."

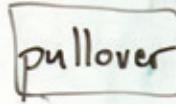
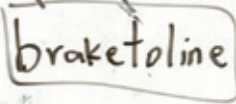
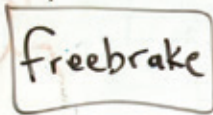


$$P = \alpha P_2 + (1-\alpha) P_1$$

pos
vel
acc



measure
plan
move



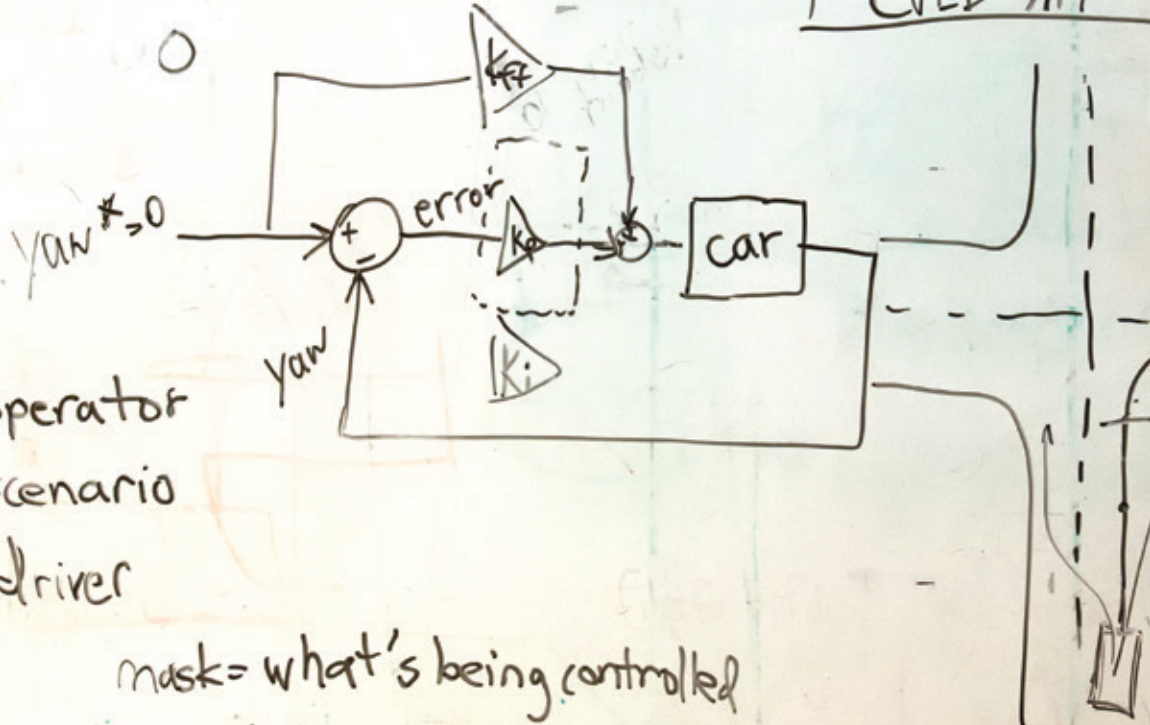
Steer
brake
throttle

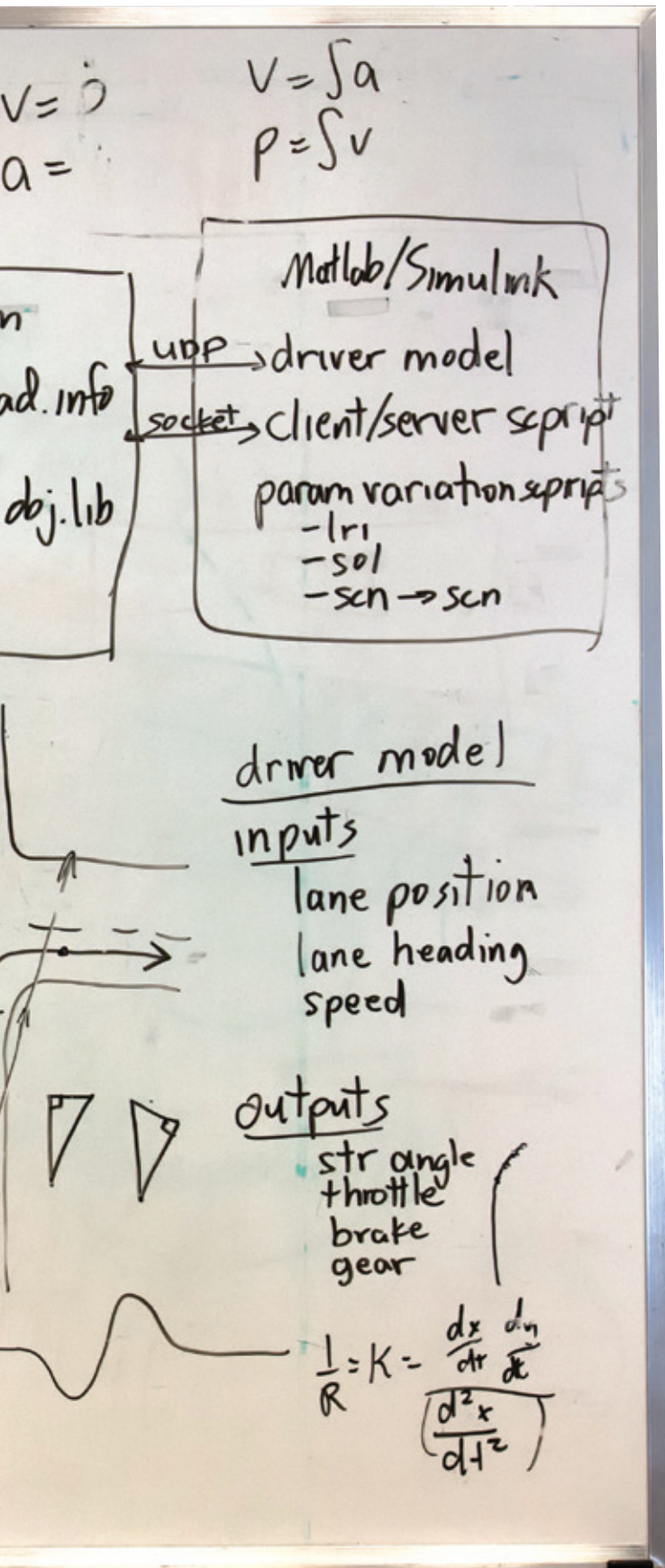
Mini Sim
lri - log.ro
↳ bli
sol.txt - scen.
SCN - scenario
CIED API

	brake	gas	steer
0	0	0	0
1	0	0	0
2	0	0	1
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

- 1 operator
- 2 scenario
- 3 driver

mask = what's being controlled
"override" = on or off





Safer Cars

≠ Safer Highways

↓

THROUGH

↓

Safer Simulation

TEXT BY GARY GALLUZZO

Item: Recently, one of Google Inc.'s experimental vehicles was involved in a crash with a bus on the West Coast. Nobody was hurt in the two-mile-per-hour fender-bender, but the first-of-its-kind crash indicates that driving on U.S. highways isn't the same as it used to be.

Item: In early February, the Governors Highway Safety Association reported a 10 percent increase in pedestrian fatalities for the first six months of 2015—the largest such increase in four decades—and suggested a linkage to cell phone usage. Pedestrian interaction with roadways is changing, too.

Conclusion: U.S. highways are changing.

Self-driving cars are either the wave of the future or they're just around the corner, depending upon whom you believe. Similarly, distracted walking, marked by pedestrians who text while walking, is a common and growing practice in virtually all U.S. cities.

What can be done to make highways safer?

Quite a bit—by studying our changing highways and the people who use them—say researchers at the University of Iowa’s National Advanced Driving Simulator (NADS). A unit of the College of Engineering, NADS is one of five national research facilities studying the safety of all highway users as a part of the \$1.4 million federal Safety Research Using Simulation (SAFER-SIM) University Transportation Center.

In 2013, the U.S. Department of Transportation (DOT) Research and Innovation Technology Administration selected the UI, University of Central Florida, University of Massachusetts-Amherst, University of Puerto Rico-Mayaguez and University of Wisconsin-Madison from among more than 140 applicants. Their challenge: to conduct research on highway safety issues as determined by the DOT.

At the UI’s NADS SAFER-SIM Center, highway safety issues being researched include:

- Automated and autonomous driving.
- Driver interaction with other drivers.
- Response differences between texting and non-texting pedestrians at the Hank Lab.
- Building and testing real world roadways in simulators.
- Student education and outreach programs for K-12 students.
- Support for a federal program (MAP-21) designed to govern U.S. ground transportation spending.
- The future of vehicle simulators and simulation study to assist researchers.

“The center is looking at all road users,” says Dawn Marshall, Director of the SAFER-SIM Center. “Simulation and safety are the key threads.”

In regard to automated and autonomous new car technology and experimental car technology, UI researchers are looking at a broad spectrum of vehicle capabilities, says Chris Schwarz, NADS senior research engineer with expertise in automated vehicles and all types of driver assistance systems. While some new vehicles have minimal automated technology, others offer assisted braking and adaptive cruise control, and still others provide assisted parking and more.

Vehicles capable of driving themselves from point A to point B are so thoroughly automated that they are considered to be “autonomous.”

Marshall predicts that in five to 10 years thousands of cars on U.S. roads will be “semi-autonomous,” thereby raising another highway safety question.

While semi-autonomous vehicles may be able to drive themselves autonomously from one city to another along interstate highways, they may need to relinquish control to their human drivers at some points. This need might arise in construction zones and at the beginning and end of trips,

where human control is needed to negotiate local roads and driveways.

For example, individuals driving from Iowa City to Chicago might drive from their homes to interstate highway I-80, at which point they would allow the car to drive autonomously for hours while they read a book or watch a movie. But at the end of their journey, and possibly along the way, it might be necessary for them to prematurely re-assume control.

“A ‘transfer of control’ in which vehicle control passes from a human to the vehicle or vice versa can happen under either normal or severe circumstances,” says Schwarz. “If a driver doesn’t have full situational awareness when a transfer of control occurs, it could lead to safety problems.”

“If people place too much trust in autonomous vehicles, drivers could end up letting things go when they should be paying attention. For example, in the extreme, a driver could be watching a movie or sleeping when a transfer of control is requested,” says Schwarz.

“This is a major question,” says Marshall. “There will be a transfer of control. Something as simple as backing out of your driveway to encountering highway construction or a crash site—those are not leisurely activities; they are time-critical.”

While the autonomous study remains in the planning stages, another safety study—on “distributed simulation,” or how one driver interacts with another—is scheduled to begin this summer.

In this study, two drivers will be in two different driving simulators. The study will provide a model of how people in slightly different locations experience the same drive down the same highway.

Examples of real-world situations in which distributed simulation is key to avoiding crashes include lane changing on the highway and driver interactions at four-way-stop intersections.

In both instances, each driver must compensate for the presence of other drivers if all are to avoid a crash. Sometimes the key to ensuring the safety of all drivers is as simple as a wave of the hand or a nod of the head to indicate that the one driver is aware of the other.

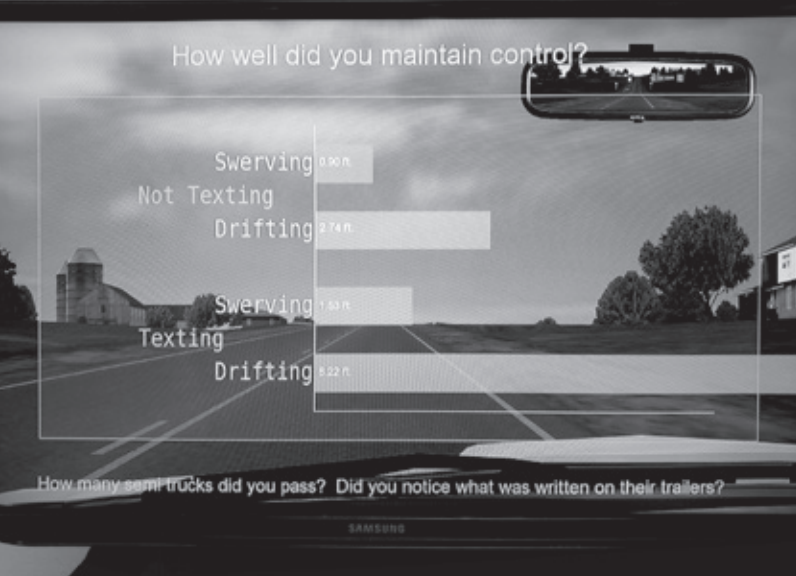
The distributed simulation study will also look at distracted driving. Distracted driving, Marshall says, is a very dangerous problem marked by significant differences in performance between distracted and non-distracted drivers.

“Distributed simulation gives us a look at one human interacting with another, while we as researchers are able to record and understand those interactions,” says Marshall, “which is very exciting because it is the missing link between on-road and simulator data!”

A pedestrian-focused SAFER-SIM study is investigating texting pedestrians on a crosswalk as they encounter



DISTRACTED DRIVING, MARSHALL SAYS, IS A VERY DANGEROUS PROBLEM MARKED BY SIGNIFICANT DIFFERENCES IN PERFORMANCE BETWEEN DISTRACTED AND NON-DISTRACTED DRIVERS.



realistic traffic situations in a computer-simulated and safe environment. This study, which is in full development, is taking place at the UI's Hank Virtual Environments Lab located on the UI campus.

So far, researchers have found differences between texting and non-texting students encountering traffic at crosswalks.

“People texting on cell phones walk slower and pay less attention to their surroundings,” says Jodie Plumert, co-principal investigator and Hank Lab co-director.

The research is designed to determine whether texting pedestrians will pay attention to countdown (think “3-2-1-0”) warning messages sent by approaching technology-equipped cars to pedestrians’ cell phones. The answer isn’t as simple as it may seem because some people may choose to ignore warning messages if those messages are sent too frequently, says project co-investigator Joe Kearney.

Hank Lab studies have always benefited from the lab’s capability to change such variables as the number of vehicles on the roadway and the intervals between moving vehicles. Recently, the Hank Lab acquired the ability to study two test subjects simultaneously. It’s a capability that should expand study opportunities for both pedestrians and bicycles.

A NADS SAFER-SIM study that examines roadways that have yet to be constructed may save valuable highway resources, as well as make roadways safer.

In this project, researchers will enter real-world roadway data into a simulator with the goal of creating a simulated version of a highway that is on the drawing board for future construction.

“We can build a road in the simulator before it has been constructed in the real world and test the safety implementations. We can do this in a few months using a simulator—not the years it would take to collect safety data after it is built,” says Marshall.

She notes that a dangerous intersection, for example, can take years to correct because data must be collected before changes can be made. Even after real-world data is collected on the number and types of crashes, safety experts will still have little notion of what drivers experienced just prior to a crash.

However, researchers can use a simulator to re-create the intersection, introduce real drivers to the situation, and collect information on braking, steering and other variables and analyze the data—all in a matter of months.

“Why people crash is a huge puzzle that we have to take one bite at a time” says Marshall.

In addition to research, educational outreach is part of the NADS SAFER-SIM Center. Junior high and high school students in the Iowa City area plan to use the NADS to collect and analyze driving data. They will also use the simulator to study principles of physics, such as the “coefficient of friction.”

The coefficient of friction describes the relationship between the force of friction between two objects—in this case, vehicle tires and the roadway—and the normal force between those objects, says Tim Brown, NADS senior researcher. The friction between two surfaces changes stopping distances and can convert energy into heat, a process of interest to physicists and engineers alike.

Already, NADS researchers have exhibited a Texting and Driving Simulator for interactive participation by students at Mount Pleasant Middle School, Bettendorf Middle School and Des Moines Area Community College (DMACC), as well as children and parents attending the 2016 Cedar Rapids STEM Festival.

NADS research assistant Jacob Heiden noted that students had the opportunity to see the unintended—and dangerous—consequences of distracted driving when operating the Texting and Driving Simulator.



Another facet of the NADS SAFER-SIM Center's educational outreach effort is a new online course called Global Road Safety that is being developed in the UI College of Public Health and will be made available locally, nationally and internationally to students and practitioners.

Cara Hamann, postdoctoral research scholar, and Cori Peek-Asa, director, of the University of Iowa Injury Prevention Research Center, are designing the course that will allow students to better understand how roadway risks vary widely around the world and what can be done to make roads safer. The course will use innovative student-led teaching methods.

“Globally, road traffic will soon become the fifth leading cause of death, with rates growing quickly in many low and middle income countries,” says Hamann. “We are very excited to be working on this new interactive online course, which will bring together students and practitioners to examine interdisciplinary approaches to reduce this global burden of road traffic crash injuries and deaths.”

Additionally, the SAFER-SIM project, together with the UI Public Policy Center and MyCarDoesWhat.org, has a miniSim™-based exhibit that will travel across Iowa as part of the UI Mobile Museum. Visitors learn about modern safety systems as they interact with the portable simulator, which is based upon the world-class NADS-1 simulator (http://www.nads-sc.uiowa.edu/sim_minisim.php).

One of the messages of the educational outreach program is that certain traffic flow patterns are safer than others. Roundabouts are safer and more efficient than four-way-stop-sign intersections. Also, using “J-turn” entryways to cross busy highways can reduce T-bone accidents. A J-turn is a maneuver in which a north-bound car would be able to emerge driving west-bound from an intersection by turning right and going east for a mile or so and then crossing the median and turning left to enter west-bound traffic.

Yet another NADS SAFER-SIM Center goal is to support Congressional act called MAP-21 (Moving Ahead for

“GLOBALLY, ROAD TRAFFIC WILL SOON BECOME THE FIFTH LEADING CAUSE OF DEATH, WITH RATES GROWING QUICKLY IN MANY LOW AND MIDDLE INCOME COUNTRIES.”

CARA HAMANN, POSTDOCTORAL RESEARCH SCHOLAR

Progress in the 21st Century Act). Passed by Congress and signed into law by President Barack Obama in 2012, MAP-21 is a blueprint for spending on U.S. ground transportation.

Among the bill's provisions is one that consolidated funding for bicycle and pedestrian transportation into a program in which half of such funding is used by metropolitan planning organizations and the other half is used by the states.

“MAP-21 is a safety goal issued by the federal government and includes road users such as pedestrians and bikes,” says Marshall. “At NADS, we're looking at the vehicle research component of MAP-21.”

Finally, the NADS SAFER-SIM Center is investigating the future of vehicle simulation itself.

Today, recreating a real world location for use in a simulator is largely a manual process. It can take from one to three months for an engineer to create a location based on specifications and measurements gathered in the field.

Marshall says that in the future, she would like to have a process that allows the automatic conversion of engineering drawings and other data for roadways into environments in the simulator in hours or minutes.

“Such variables as the slope of a road, the position of a stop sign, the timing of a traffic light, and the number of inches the sign or light is located from an intersection would be instantly available to the simulator,” Marshall says. “We have to build a simulator to account for all highway user variables—from the ground to the sky.” ■



TEXT BY JEAN FLORMAN

Achieving excellence

THE POWER

OF THE SOCIETY OF WOMEN ENGINEERS

6 years ago a group of 60-plus professionals and students gathered in New York City to launch a new organization to support and encourage women engineers.

Thousands of women had already made inroads in proving their abilities to learn and apply high-level technical, scientific, and mathematical skills during World War II, and Post-War era women now sought to build on that impact by advocating for new educational and professional opportunities. In essence, they wanted to leverage their potential and contribute to society. To that end, on May 27, 1950, the 60-or-so women who met at The Cooper Union's Green College of Engineering created the Society of Women Engineers.

Although the number of women in engineering paled by comparison to the number of their male colleagues—considerably less than one percent of American engineers were women in 1950--during the next two years, the young organization formed new chapters, launched the Journal of the Society of Women Engineers, and gained nonprofit status. Today, SWE boasts 27,000 members (slightly more than half of whom are students), 300 collegiate chapters, and 100 professional chapters.

“SWE provides members a terrific way to network with other engineers, and particularly for students, to learn more about engineering as a profession,” says Jane Driscoll, BSE 1995, MBA 2006. Driscoll is a senior engineer at John Deere World Headquarters in Moline, IL, a former member of the College of Engineering Civil and Environmental Engineering Advisory Board, and a Lifetime Member of SWE. “As an undergraduate at Iowa, I wanted to take advantage of every opportunity to experience more about the professional world of engineering and to meet both my peers and practicing engineers. SWE was a great way to do all of that.”

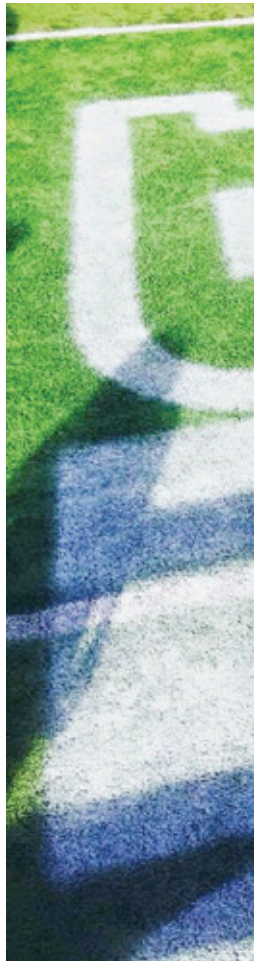
“SWE helped student members find our way,” Driscoll recalls. “It underscored the value of women’s different leadership styles and provided successful role models. And when it came time to apply for internships and jobs, it helped us make sure that prospective employers understood that you knew how to work and how to lead.”

Like many female engineering students at Iowa, Driscoll discovered SWE during a two-day High School Conference that the UI chapter sponsors every spring for 50 high school juniors. Girls who have already been admitted to Iowa or have expressed an interest in learning more about engineering are invited to campus to learn more about the college and professional opportunities for women, as well as to meet each other, UI engineering faculty members, and current students.

“I wish I had been able to attend the conference,” says Sailahari Ponnaluri, a senior in biomedical engineering who will begin the Ph.D. program at Pennsylvania State University in the fall. “I was attending a robotics conference the same weekend, but it would have been great to stay in the dorms and start to get to know the college and my future peers.”

“SWE ... underscored the value of women’s different leadership styles and provided successful role models. And ... it helped us make sure that prospective employers understood that you knew how to work and how to lead.”

JANE DRISCOLL, BSE 1995, MBA 2006





Clockwise, from top left: SWE members attended a conference; SWE members raise funds by cleaning Carver Hawkeye Arena after an event; SWE members enjoy a social outing; Amanda Smith, SWE VP, could be found sitting in the front row at Kinnick Stadium for most home football games.



Perhaps because Ponnaluri wasn't able to participate when she was a high school student, she now co-chairs the UI SWE committee that plans and produces the High School Conference, a role that she says has provided an excellent opportunity to strengthen her leadership skills.

"Participating on the SWE Executive Board has helped me develop more self-confidence," says Ponnaluri, who wasn't certain whether engineering was the right career for her when she began at Iowa. She says SWE has helped her hone her project planning and communication skills as well as develop strategies "to better manage academic challenges and to appreciate the value of networking with different groups of people."

Ponnaluri first learned about SWE from a robotics mentor who worked at Caterpillar Corporation, and one of her father's colleagues told her about the national organization—two examples of how such professional-to-student connections can serve a vital function in encouraging women that, in Ponnaluri's words, "you can do it." Jillian Nagle (BSE 2013) underscores that important networking role of the organization, and notes that SWE was especially significant to her as one of six women among the 60 mechanical engineers in her graduating class.

"Even as a freshman, I started to get to know successful women engineers and students who were juniors and seniors," says Nagle, who became the chapter president during her own senior year.

Nagle says she chose Iowa over engineering colleges at Iowa State University and the University of Illinois because Iowa encouraged her to thrive not only by focusing on engineering but also by exploring other vocational and avocational opportunities.

SWE executive board.



“The goal is to raise a minimum of \$50,000 by December 2017. We hope it will be a lasting legacy that could make a big difference to future UI women.”

JANE DRISCOLL, BSE 1995, MBA 2006

“It was that ‘Engineering-and-Something-More’ vibe that allowed me to actively participate in SWE and continue to pursue other interests, like club water polo,” she says. “I wanted to do well academically but didn’t want to be totally consumed by my studies.”

As a first-year student involved with SWE, Nagle met senior engineering student and SWE chapter president Brianne O’Laughlin. The following year O’Laughlin encouraged Nagle to apply for an internship at the Iowa City P&G plant and introduced her to the company’s recruitment head.

“After I got the internship,” Nagle says, “I was specifically told that my good experience with SWE was an important part of the reason I was hired.”

Today Nagle is a project manager at P&G’s Iowa City operation as well as president of the East Central Chapter of SWE, one of five Iowa professional chapters that provide post-graduation professional support, resources, and mentoring that nurture the career development of women engineers in academics, government, and industry. The support system includes scholarship awards for professionals and women engineers re-entering the workforce; communication through the SWE magazine, a monthly newsletter, and social media; participation in workshops at regional and national conferences; and membership in affinity groups that both provide mutual support to their members and educate SWE members about issues and challenges that face particular groups.

As president of her professional chapter, Nagle maintains close ties to her alma mater. She helps the UI student group with K-12 outreach efforts and has invited faculty members to speak at chapter meetings and conferences.

“Being part of the professional chapter has been especially fun for me,” Nagle says, “because I stayed in the area after graduating and have continued to build on the networking I developed through my involvement as a student. Once I graduated, it was like getting an immediate support system.”

Driscoll notes that a number of alumni in SWE professional chapters also are spearheading an effort to create an endowment to support the UI chapter of SWE.

“The goal is to raise a minimum of \$50,000 by December 2017,” she says, “and it would be a wonderful seed fund for outreach programs and student travel to regional and national conferences. We hope it will be a lasting legacy that could make a big difference to future UI women.”

Driscoll and seven other UI engineering alumni came up with the idea during the 2012 national SWE conference, and they have been drumming up support ever since. The effort was sparked in part by the fact that Alyse Stofer (BSE 1997) had been elected national president—the fourth UI alumna to have served in that role. The endowment also was inspired by the recent death of UI Professor Emeritus Enzo Macagno, who along with his wife Matilde, had been strong supporters of women engineering students and the student chapter of SWE at Iowa.

A solicitation letter signed by the eight women engineers best expresses their appreciation and their hopes:

“Our SWE student section experience gave us tremendous opportunity to develop these leadership skills,” they say, “and we continue to use these skills in our professional, family, and volunteer endeavors.

“We want to make sure that current and future students have the same remarkable opportunities that we experienced at Iowa.” ■

Marriott Honored with UIAA Distinguished Alumni Award for Service

Thomas J. Marriott Jr., 68BSChE, a safety and manufacturing/plant operations expert in Pennsylvania, received the University of Iowa Alumni Association Distinguished Alumni Award for Service June 11. The award is granted to UI graduates or former students for specific and meritorious service to their university, community, state, or nation.

Marriott has used his long track record of professional success to help University of Iowa students. Marriott reconnected with the UI College of Engineering in 2008 when he joined the Department of Chemical and Biochemical Engineering (CBE) advisory board. The involvement sparked an idea that has changed many Iowa engineering students' lives.

"Based on his experiences with our board, Tom decided that our students needed more advice from professional engineers," says C. Alan Guymon, the Sharon K. Tinker Process Safety Professor of Chemical and Biochemical Engineering and departmental executive officer of chemical and biochemical engineering. "He has used his great enthusiasm...for the university and our students to establish a truly transformative mentoring program."

The four-year-old program, which matches professional engineering mentors starting sophomore year with students from the chemical and biochemical engineering department, began with 24 volunteer advisors whom Marriott helped recruit. Since then, it has continued to evolve and grow, with at present approximately 50 mentors and 100 CBE students involved as mentees in the program. The CBE mentoring program has become a model for other UI engineering areas and possibly for other university engineering colleges.

"Looking back, I really could have used some advice from someone working in the profession," says Marriott, also an avid Hawkeye fan and longtime football season-ticket holder. "I'm retired, I love the University of Iowa, and I wanted to give back."

Thanks to his inspired thinking and tireless volunteerism, Marriott has paved the way for new generations of UI College of Engineering graduates to make their own indelible marks. ■



Engineering Alumni Kohs Inducted into Distinguished Engineering Alumni Academy

Kwang-Kuk and Kook-Wha Koh were inducted April 28 into the college's Distinguished Engineering Alumni Academy (<http://www.engineering.uiowa.edu/alumni-friends/honor-wall/distinguished-engineering-alumni-academy>) the first husband-wife engineering graduates to receive this honor.

The Kohs arrived in Iowa City in the mid-1960s to pursue graduate studies in the then named Department of Chemical Engineering. The couple met as children and both earned BS degrees in chemical engineering at Seoul National University. Married in 1963, they decided to continue their engineering studies in the United States, both working on research projects related to the newly established field of membrane separations pioneered by University of Iowa professor and chair Karl Kammermeyer.

Kwang-Kuk completed his PhD in 1968. Kook-Wha received her PhD in 1970.

After earning their PhD degrees, the Kohs moved to Baytown, TX, where Kwang joined Esso (the international affiliate of ExxonMobil), where he worked in the synthetic fuel program for coal gasification. Eager to continue her own professional trajectory, Kook-Wha secured a postdoctoral fellowship at Rice University where she joined the renowned artificial heart program led by Michael DeBakey, MD.

They moved to Detroit when Kwang began working for American Natural Resources as an administrator in coal technology. Kook-Wha seized the opportunity to launch a new commercial venture: Chrysan Industries, Inc. The company is a leading global supplier of automotive lubricants and specialty chemicals.

Honored by their induction to the Academy, the Kohs have dedicated themselves to "promote and ensure equal opportunities for minority business enterprises and women-owned businesses ... and we recognized the importance and encourage the balance of career, family, health and fitness, and faith." ■



Organizer Takes \$6,000 Prize in Storer Engineering Student Entrepreneurial Start-up Award Competition

The University of Iowa College of Engineering has announced that the student business plan for a company named Organizer is the winner of its 2015-16 Hubert E. Storer Engineering Student Entrepreneurial Start-up Award.

Organizer, a collaborative software solution to improve the productivity, communication, and coordination for organ donor networks, received \$6,000 from the college to help advance the company's business.

The founders include Dalton Shaull, CEO and human physiology undergraduate student at the University of Iowa, graduating in May 2016. Shaull brings four years of research and internship experience to the team in software, scientific research methodology, and employee management. Eric Pahl, CTO, is a biomedical engineer and graduate from the University of Iowa with Engineering and University Honors, including a Technical Entrepreneurship Certificate in Spring 2015. Pahl is currently studying health informatics in pursuit of a PhD in Spring 2020 at the University of Iowa.

Organizer uses collaborative and communicative technologies to tackle some of healthcare's greatest problems. Its products utilize the versatility of smartphone technology and the internet to provide intelligent communication and coordination between organ donation professionals.

Organizer is currently testing its product at two customer sites—Iowa Donor Network and LifeSource—and is continually recruiting and building out its business development and research teams.

The annual Storer award, established in 2002 and funded by an endowed gift from the late College of Engineering alumnus Hubert E. "Bud" Storer (BSIE 1959), currently provides \$6,000 of initial financial support for a College of Engineering student technological business plan. Storer was president, owner, and founder of Storer Equipment Company, Shreveport, LA. ■

14th Annual Research Open House Featured 150 Posters

The UI College of Engineering's 14th Annual Research Open House showcased, celebrated, and promoted the research activities and accomplishments of the College of Engineering's students, faculty, and staff.

Almost 150 posters were presented by College of Engineering undergraduate and graduate students throughout the day.

For a copy of the Research Open House brochure, go to <http://www.pageturnpro.com/University-of-Iowa-College-of-Engineering/71632-2016-Research-Open-House/index.html>. ■



Kasra Zarei, senior, biomedical engineering, explains his research to judges.



**Under the Seamans Center:
Fossils provide a glimpse of life in Iowa 385 million years ago**

Text by Jackie Stolze; photo by Ryan Clark

Deep beneath the Seamans Center, there is evidence of a radically different world.

Construction crews working on the building expansion recently stopped work to marvel at some unusual looking rocks coming up from the drill rig. Fascinated, the foreman set them aside.

Later, he showed them to geologist Ryan Clark of the Iowa Geological Survey (a unit of IIHR—Hydroscience & Engineering). Clark says the limestone rocks do include fossils, and here's the kicker: They're about 385 million years old.

"They haven't seen the light of day in at least half a million years," Clark says. The fossilized creatures were very akin to a modern coral reef—corals, sponge-type animals, and more. The fossils captured media attention nationwide, including reports from as far away as Salt Lake City and Tampa.

If you're on campus and want to see similar fossils, stop by Old Capitol, which was built from the same type of limestone quarried from local sites. Get up close and you can see big coral fossils and the like.

Some of the recently unearthed fossils will also be on display at the Seamans Center.

Student Recognition

Rae Corrigan, junior majoring in biomedical engineering, was named a 2016 Goldwater Scholar

Johnathan D. Culpepper, graduate research assistant in Civil and Environmental Engineering and a National Science Foundation (NSF) graduate research fellow, was featured on the NSF web site—<http://nationalsciencefoundation.tumblr.com/post/139120132188/fieldwork-from-plant-fossils-to-robotics>.

Phil Deierling, doctoral student in mechanical and industrial engineering studying under Olesya Zhupanska, associate professor, received the Lockheed Martin Student Paper Award in Structures at the American Institute of Aeronautics and Astronautics SciTech 2016 conference in San Diego (<https://www.aiaa-scitech.org/>). His paper was titled “Thermal Response of Spatially Graded Metal-Ceramic Structural Panel to Non-Uniform Heating in Hypersonic Flow.” Deierling authored the paper along with Zhupanska and Crystal L. Pasilio from Air Force Research Laboratory, Munitions Directorate, Eglin AFB, FL.

Mohsen Ghamari, PhD candidate in mechanical engineering, was the recipient of the Outstanding Teaching Assistant Award for 2016. He is conducting experimental studies of combustion behavior of isolated droplets with polymeric and nano-particle additives; handling the design, fabrication and testing of a pressurized spray system to study injection pattern of modified fuel at low temperatures; working on numerical simulation of co-firing coal and biomass, and numerical simulation of urea injection into a utility boiler to control NO_x emission and meet EPA regulations.



Sailahari Ponnaluri, senior majoring in biomedical engineering, received a Distinguished Student Leadership Certificate from UI President Bruce Harreld, at the 99th annual Hancher-Finkbine Dinner. Her current research project with Edward Sander, assistant professor of biomedical engineering, uses state-of-the-art biological assay and imaging techniques to help limit scar formation in human tissues. Ponnaluri has held two elected positions for the professional engineering fraternity Theta Tau, served as the high school conference chair for the Society of Women Engineers, mentors for the Women in Science and Engineering program at the University of Iowa, and is lead tutor for the College of Engineering. Her volunteer work includes promoting the success of the FIRST Tech Challenge program as a judges' assistant, community outreach chair, and coach; participating for the past three years at the University of Iowa Dance Marathon; and volunteering as a Veteran's Hospital service escort.

Jon Scholte, PhD candidate in chemical and biochemical engineering won the 2016 University of Iowa Outstanding Teaching Assistant Award.

Yusuf Sermet, graduate student in electrical and computer engineering and research assistant at IIHR--Hydroscience & Engineering, recently was recognized with “Best Internet of Things (IoT) Hack by Vermeer” and the “Sukup Innovation Award” at the Midwest Hackathon in Ames, IA.

Negin Sobhani, graduate research assistant in chemical and biochemical engineering, was awarded the oral presentation prize at the Second Symposium on High Performance Computing for Weather, Water, and Climate. The symposium was sponsored by the American Meteorological Society (AMS), the nation's premier scientific and professional organization promoting and disseminating information about the atmospheric, oceanic, hydrologic sciences.



Samantha Wagner (above, left), senior majoring in biomedical engineering and a senior member of the women's diving team, received the Robert Ray Faculty Athletic Representative Award at the 99th Hancher-Finkbine Dinner. Wagner is a three-time letter winner and member of the 2015 and 2016 Big Ten Championship teams. She posted personal-best scores in the 1-meter springboard (265.50) and 3-meter springboard (208.12) and registered a top-five finish during the 2013–14 season. She was named Academic All-Big Ten twice during her career and made the UI dean's list for two consecutive semesters.

Kasra Zarei, senior majoring in biomedical engineering, received the University of Iowa Student Employee of the Year Award and the University of Iowa Student Innovator Award. Zarei graduated in May with three majors, two honors theses and three certificates.

Four engineering students received 2016 National Science Foundation Graduate Fellowships: **Hunter Schroer**, PhD candidate in civil and environmental engineering; **Kathryn Langenfeld**, undergraduate student in civil engineering; **Kathryn Klarich**, graduate student in civil and environmental engineering and **Ian Nessler**, senior majoring in chemical engineering

The “Butt” group received second place in the Student Design Showcase at the Fifth Annual Design of Medical Devices Conference held April 12 in Minneapolis. Their design project “Intussusception: A Pain in the Butt,” presented by **Andrea Caceres**, **Amanda Smith**, **Claire Castanedo** and **Molly Berringer** provides an efficient and easy-to-use method to alleviate intussusception (telescoping of the bowel) in children three and under.

Fifty-four of the 300 undergraduates named to the Fall 2015 President's list were College of Engineering students. 532 engineering students were named to the Dean's List.



For the third consecutive year, the University of Iowa was the only academic institution exhibiting student work at the North American Handmade Bike Show. NAHBS, held Feb 25-28 in Sacramento, is considered the most prestigious handmade bicycle show in the world.

Faculty News

M.L. (Suresh) Raghavan, Robert and Virginia Wheeler Faculty Fellow of Engineering, professor of biomedical engineering, and researcher at the Center for Computer-Aided Design and Iowa Institute for Biomedical Imaging, was elected Fellow in the American Institute of Medical and Biological Engineering.

Michelle Scherer, Donald E. Bently Professor of Engineering, professor and departmental executive officer of civil and environmental engineering and faculty research engineer at IIHR—Hydroscience & Engineering, received the May Brodbeck Distinguished Achievement Award for Faculty April 6 at the Celebration of Excellence and Achievement Among Women, the University's annual tribute to the accomplishments of all women at the UI.

Kyung K. Choi, Carver Professor of Mechanical Engineering, professor of mechanical and industrial engineering, and researcher at the UI Center for Computer-Aided Design, was elected a Fellow of the American Institute of Aeronautics and Astronautics (AIAA).

Charles Stanier, associate professor of chemical and biochemical engineering, associate faculty research engineer at IIHR—Hydroscience & Engineering, researcher at the Center for Global and Regional Environmental Research, was appointed to the USDA Agricultural Air Quality Task Force (AAQTF).

Grants and Contracts

James Buchholz, associate professor of mechanical and industrial engineering and associate faculty research engineer at IIHR—Hydroscience & Engineering, received a \$168,013 grant from the US Department of Defense, Air Force, for “Three-dimensional vortex dynamics in unsteady, separated flows.”

Mike Gannon, research specialist at IIHR—Hydroscience & Engineering, received an \$8,934 grant from the City of Gilbert, IA, to conduct aquifer studies and groundwater modeling for the city.

Nicole Grosland, professor of biomedical engineering, professor of orthopaedics and rehabilitation and researcher at the Center for Computer-Aided Design, received an \$819,786 grant from the Roy J. Carver Charitable Trust for the “Carver Medical Device Design Laboratory. Advancing Medical Device Design, One prototype at a time.”

Mathews Jacob, associate professor of electrical and computer engineering and researcher at the Center for Computer-Aided Design and the Iowa Institute for Biomedical Imaging, received a \$466,527 grant from the US Department of Health & Human Services, National Institutes of Health for Novel Computational Framework for Free-Breathing & Ungated Dynamic MRI.

Wiltold Krajewski, Rose & Joseph Summers Chair of Water Resources Engineering and Director of the Iowa Flood Center, received a \$15,000 award from the University Corporation for Atmospheric Research for “COMET flood assessment and prediction platform.”

Anton Kruger, Donald E. Bently Faculty Fellow of Engineering, professor of electrical and computer engineering, professor of civil and environmental engineering, and faculty research engineer at IIHR—Hydroscience & Engineering, received a \$161,287 grant from the US National Science Foundation for “Acquisition of Equipment for Calibration and Engineering Tests for University of Iowa's XPOL Radars.”

Troy Lyons, director of engineering services, IIHR—Hydroscience & Engineering, received a \$3,500 contract from California Wave Power Technologies, LLC, for IIHR Wave Basin Energy Converter Testing.

Keith Schilling, research engineer at IIHR/Iowa Geological Survey, received a \$60,000 grant from Iowa State University for identifying and quantifying nutrient reduction benefits of restored oxbows.

Fatima Toor, assistant professor of electrical and computer engineering received an award in the amount of \$80,000 from the US Department of Energy, Sandia National Laboratories for “Bifacial photovoltaic modules and systems.”

Michelle Scherer, Donald E. Bently Professor of Engineering, professor and DEO, civil and environmental engineering, and faculty research engineer at IIHR—Hydroscience & Engineering, received a \$17,000 subcontract from Battelle Memorial Institute, Pacific Northwest Laboratories for “Molecular mechanisms of interfacial reactivity in near surface and extreme geochemical environments.”

H. S. Udaykumar, professor of mechanical and industrial engineering and faculty research engineer at IIHR, received a \$159,478 grant from the San Diego State University Research Foundation to study simulation of particle-laden blast waves with inter-scale coupling and uncertainty quantification.

Andrew Veit, program manager, MiniSim[®], National Advanced Driving Simulator, received a \$13,355 contract from the University of Kentucky for “miniSim scenario Development,” and a \$135,870 grant from the University of Kansas for development of a research driving simulator.

Gabriele Villarini, associate professor of civil and environmental engineering and associate faculty research engineer at IIHR—Hydroscience & Engineering, received a \$159,792 contract from the US Department of Defense, Army Engineer Research and Development Center for “Water resources and geospatial analysis: attribution of changes and evaluation of actionable climate information across the northern great plains and the central United States.”

The Virtual Soldier Research Program at the University of Iowa has been awarded a \$2.6 million grant from the Office of Naval Research to create a simulation program to predict and prevent musculoskeletal injuries in U.S. Marines—one of the leading medical problems hampering military readiness.

Larry Weber, Edwin B. Green Professor of Hydraulics, professor of civil and environmental engineering and director of IIHR—Hydroscience & Engineering, received a \$20,000 contract from S&G Materials for Hydraulic Modeling of the Iowa River in the Vicinity of the S&G Materials Sand and Gravel Operation South of Iowa City, IA.

Alumni, Where Are They Now?

Elizabeth Bernard (BSE 2000) was named senior corporate counsel, litigation at Rimini Street, Inc., Las Vegas, NV. She was appointed to College of Engineering Advisory Board.

Engineering alumna **Beth Calabotta** (BSE 1989 chemical engineering), former Monsanto director for bioenergy and currently serving on the National Biodiesel Foundation (NBB), was honored during the 2016 National Biodiesel Conference and Expo with the “Eye on Biodiesel” Impact award for her tireless dedication to the advancement of biodiesel.

Bob Campbell (BSEE 1981) was appointed distinguished technologist at HP, Inc. He will be leading new experiences for the office and conference room of the future.

Steve Davis (MS 2003), president and co-founder of BIO::NEOS, Inc., received the Dean’s Award for Entrepreneurial Leadership.

Greg Dils (BSE 1998), director of software development, Innomatix, Coralville, IA, received the College of Engineering Dean’s Award for Distinguished Service.

Randy Beavers and **Phil Mayberry** were featured Hometown Hawkeyes at the University of Iowa Hawkeye Caucus, an online series of profiles featuring UI graduates who went on to very successful and rewarding careers in the state of Iowa.

Ralph Keipert (BSE 1992 Electrical Engineering) is the founder and President of Tahoe Partners, Chicago.

Engineering alumnus **Andrew Leopold** (BS 1984 biomedical engineering), vice president, Medical Murray, Chicago, received a Dean’s Award for Distinguished Service and presented a special seminar Thursday, February 19.

Anthony Melchiorri is a post-doctoral scientist at Osiris Therapeutics.

Eric Paterson has been appointed to the College of Engineering Advisory Board. Paterson is professor and department head of aerospace and ocean engineering, Rolls-Royce Commonwealth Professor of Marine Propulsion; and faculty affiliate, Hume Center for National Security and Technology at Virginia Polytechnic Institute and State University.

Fitzgerald Steele (BSE 1997, MS 2000) is now employed with Microsoft. He is doing user experience/customer research for their Enterprise and Cloud division, initially focusing on the Azure Public Cloud.

Dean Alec Scranton lunched with alumni employed by Apple. **Kristi Schmidt Bauerly** coordinated the luncheon. Attendees included **Bob Ridenour** and **Ross Errett**. Also joining the group was John D. Lee, former UI College of Engineering faculty member and current professor of industrial engineering at the University of Wisconsin—Madison.

Nathan Whitlow (BSEE 2007) is a physician with the US Navy stationed in San Diego.

Couplings

Nathan Whitlow (BSEE 2007, MD 2011) and Whitney Fitzgerald were married April 30, 2016, in Des Moines, IA.

Maribel Treto (BSE 2011) and Patryk Nowak were married April 23, 2016.

Everett D. Alton (MS 1955) of Plainwell, MI, June 19, 2013.

John S. Anderson (BSChE 1960) of Sarah, MS, March 6, 2016.

Louis I. Anderson, Jr. (BSME 1959) of Escondido, CA, May 16, 2012.

Eldron C. Arendts (BSCE 1938) of Virginia Beach, VA, February 4, 2007.

Forrest G. Baker (BSEE 1937) of Davenport, IA, January 22, 2009.

John A. Brady (BSEE 1956, JD 1961) of Lexington, KY, February 20, 2016.

Water P. Bratsberg (BSEE 1952) of Unionville, Ontario, September 3, 2008.

David M. Brower (BSME 1982) of Marion, IA, March 9, 2016.

Louis H. Butterworth (BSChE 1937) of Aliso Viejo, CA, November 28, 2009.

Theodore H. Cate (BSCE 1950) of Spencer, IA, December 18, 2015.

Pet-Tong Chiang (MS 1973) of Fort Worth, TX, June 24, 2009.

Charles T. Crane (BSME 1951) of Sedona, AZ, December 7, 2015.

Fred Dalasta (BSEE 1943) of Lyndhurst Mayfield, OH, July 3, 2009.

Richard E. Deasy (BSEE 1958) of Cedar Rapids, IA, January 2, 2016.

John M. Ertz (BSChE 1965) of Asheville, NC, February 3, 2016.

Thomas P. Fisher (BSME 1959) of Solon, OH, January 2016.

Frank H. Gardner (MS 1972) of Touchet, WA, March 25, 2016.

Robert R. Hill (BSCE 1950) of Indianapolis, IN, January 15, 2016.

Gar B. Hoflund (BSChE 1970) of Gainesville, FL, January 15, 2013.

James A. Huesing (BSEE 1970) of Rio Rancho, NM, January 26, 2016.

Lee G. Ingwersen (BSME 1958) of Dublin, CA), August 15, 2009.

Gerald M. Kraai (BSIE 1964, JD 1967) of Prairie Village, KS, April 1, 2016.

Harold R. Lorenz (BSChE 1949) of Manchester, IA, March 4, 2016.

James H. Lowber (BSME 1966) of San Diego, CA, January 24, 2011.

Michael J. Mack, Sr. (MS 1949) of Waterloo, IA, February 7, 2016.

Richard N. Maher (BSEE 1958) of Fairfield, CT, January 24, 2016.

Donald K. Michel (BSEE 1954) of Saint Ann, MO, March 27, 2016.

Edward B. Mullen (BSIE 1965) of Burlington, MA, January 31, 2016.

Brian S. Obr (BSCE 1982) of Wichita, KS, February 25, 2016.

Michael W. Oglesby (BSE 1985) of Walford, IA, January 6, 2016.

Thomas E. Paintin (BSEE 1950) of Roseburg, OR, January 8, 2016.

Arlo D. Pelley, Sr., (BSEE 1950) of Marion, IA, February 16, 2016.

Delmo M. Piagentini (BSCE 1962) of Urbandale, IA, January 23, 2016.

Kenneth M. Redding (BSE 1992) of Cross Plains, WI, March 11, 2016.

Omar Senler (MS 1958) of Louisville, KY, February 10, 2016.

Leland P. Schwartz (MS 1940) of Rancho Cucamonga, CA, December 5, 2015.

Donald R. Stevens (BSEE 1957) of Cedar Rapids, IA, April 8, 2016.

Wayne R. Winslow (BSME 1954) of Blair, NE, April 3, 2016.

Stewart A. Zuber (BSCE 1969) of Cheyenne, WY, March 17, 2016.

Construction Leaps Ahead on Seamans Center Expansion



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Construction is well underway on a 65,000-square-foot addition to the University of Iowa Seamans Center for the Engineering Arts and Sciences. The \$37 million project, funded by a partnership between individual and corporate donors, the UI, and college research centers, is expected to be completed by the fall of 2017, with existing classrooms that have been affected by construction reopening in the fall of 2016. It will adjoin the current Seamans Center and extend the complex south, toward Burlington Street.

A centerpiece of the annex will be a state-of-the-art design studio housed in the new lobby area. The studio will enhance the college's collaborations with UI arts programs and enable students to work on multi-disciplinary projects during their first semester on campus.

To stay up to date on the construction project, go to <http://www.engineering.uiowa.edu/annex>