

PIPELINE

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Face Recognition Using Forensic Sketches Aids Law Enforcement

Face recognition technology is moving forward at a fast pace to address several requirements in security and law enforcement. Research in MSU's Pattern Recognition and Image Processing (PRIP) Lab in the Department of Computer Science and Engineering (CSE) is helping



to make that happen. The recent research of CSE PhD student Brendan Klare and colleagues is a good example.

Klare, working with Zhifeng Li, a post-doc, and University Distinguished Professor Anil Jain, developed algorithms and created software to help automatically match hand-drawn facial sketches to mug shot photos stored in law enforcement databases. "State-of-the-art commercial face recognition software is not designed to match sketches to photographs," says Klare. "They are designed to match photographs to photographs."

The sketches used in this project are called forensic sketches, drawn by police sketch artists by interviewing a witness to obtain a description

of the suspect. Traditionally, these forensic sketches are posted in prominent public places in hopes that someone will recognize the suspect and contact authorities. The reason that the sketches typically cannot be matched to the photos is that the sketches contain different textures compared to the photographs that they are being matched against. Further, the accuracy of the forensic sketches depends on the details and preciseness of the verbal description of the suspect's face provided by the witness. Being able to match a sketch to a mug shot in a database will speed the work of law enforcement agencies in apprehending suspects.

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Brendan Klare, a CSE PhD student, is working on a forensic sketch project to help law enforcement.

CSE Professor Retires, but Continues Active Role with Students and Colleagues

CSE professor **George Stockman** has retired, but you are not likely to find him sitting at home in a rocking chair!

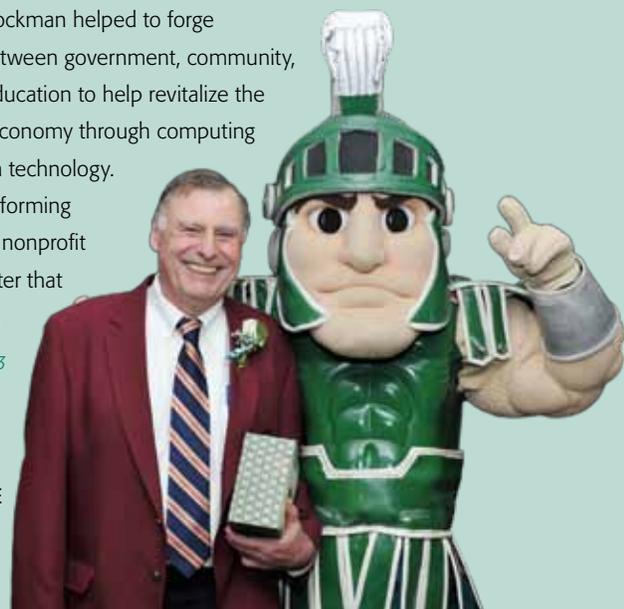
Stockman came to MSU and the CSE department in 1982. Over the years his leadership and enthusiasm has had a profound impact on the MSU community. Stockman is an inspiring teacher and mentor who advised the MSU Concrete Canoe Team and other student groups for more than two decades. His energy and experience as an administrator have benefited the department in his roles as graduate director, associate chairperson, and acting chairperson.

Stockman's research interests include computer vision, image processing, graphics, and artificial intelligence. His research in collaboration with faculty in the MSU Department of Crop and Soil Sciences resulted in a root measurement system used worldwide by plant and soil scientists. His 3-D measurement software helped to launch a start-up company—ERL, LLC—which evaluates the ergonomic design of cars.

Recently, Stockman helped to forge partnerships between government, community, industry, and education to help revitalize the mid-Michigan economy through computing and information technology. He took part in forming ITEC-Lansing, a nonprofit technology center that offers hands-on

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Sparty gives CSE professor George Stockman a Spartan sendoff at Stockman's retirement party.





Another academic year has been completed and we celebrated another wonderful commencement weekend on

campus. As we do each semester, we held the traditional CSE graduation breakfast before the spring undergraduate commencement. It is with joy that students and their families gather with faculty to celebrate the students' new status as computer science alumni.

The computer science program opens many opportunities that the new alumni began this summer, either starting their professional career, or preparing to continue studies within graduate school.

The weekend also provided a time to recognize our 2011 CSE Distinguished Alumni Award winner, Dr. Jianchang Mao, vice president and head of advertising sciences at Yahoo! Labs. We celebrated his many accomplishments since he received his PhD in Computer Science at MSU. It was a wonderful time to reconnect with Dr. Mao and his wife, Yao Chen, and wish our new alumni well as they distinguish themselves in their careers. 🌸

2011 CSE Distinguished Alumni Award

Dr. Jianchang (JC) Mao (PhD '94) received the 2011 Computer Science and Engineering Distinguished Alumni Award at the annual College of Engineering Alumni Awards Banquet in May. The award recognizes an alumnus or alumna who has distinguished himself/herself as a leader in the computer science and engineering profession through professional contributions, public service, and personal accomplishments.

Mao is vice president and head of advertising sciences at Yahoo! Labs, overseeing the R&D of advertising technologies and products including search advertising, contextual advertising, display advertising, targeting, and categorization. He was also the science/engineering director responsible for the development of back-end technologies for several Yahoo! social search products, including Yahoo! Answers.

Prior to joining Yahoo!, Mao was director of emerging technologies and principal architect at Verity Inc., a leader in Enterprise Search (acquired by Autonomy), from 2000 to 2004. Prior to this, he was a research staff member at the IBM Almaden Research Center from 1994 to 2000, after receiving his PhD.

Mao received the prestigious Yahoo! Leadership Superstar Award (for vice presidents and above) in 2010 for "his tremendous impact on Yahoo!'s advertising business and for exemplifying the Yahoo! leadership standard. His leadership in advertising sciences has yielded significant monetary benefits for Yahoo! and,

more importantly, set the stage for significant innovation in advertising." Two of his teams also received separate corporate awards in 2010 for delivering Yahoo!'s next-generation advertisement inventory management system that powers the guaranteed delivery display advertising system (with billions of dollars in revenue) and for delivering numerous innovations in sponsored search (also with billions of dollars in revenue). Mao received another Yahoo! Superstar Team Award (as a team co-captain) for delivering Keystone, a new generation of contextual matching product in 2008.

During his tenure at IBM Almaden Research Center from 1994 to 2000, he received several IBM Outstanding Technical Achievement Awards and IBM Research Division Awards for outstanding contributions to the IBM postal address recognition system product, documents and forms processing systems, and intelligent character recognition technology.

His research interests include machine learning, data mining, information retrieval, computational advertising, social networks, pattern recognition, and image processing. He has published more than 50 papers in journals, book chapters, and conferences, and holds 20 U.S. patents. Mao received an IEEE Transactions on Neural Networks Outstanding Paper Award in 1996 and an Honorable Mention Award from the International Pattern Recognition Society in 1993. He served as an associate editor of the *IEEE Transactions on Neural Networks* (1999-2000),

and as a founding editorial board member (1997-2000) of the *Pattern Analysis and Applications* journal. He has served on the Technical Committee of the Web Intelligence Consortium since 2002 and on the MSU CSE Strategic Partners Council since 2009.

Mao credits the training he received in the CSE department for his career success. He notes that Dr. Anil Jain, his adviser while he was at MSU, has become his long-time mentor. "I deeply cherish my PhD experience at MSU," he says.

He and his wife, Yao Chen, also a CSE graduate, live in San Jose, California. They have two children: son David who was born while the couple was at MSU, and daughter Julie. Mao likes reading, jogging, and skiing. 🌸



Yao Chen and Jianchang Mao celebrate at the annual College of Engineering Alumni Awards Banquet.

Face Recognition (continued from page 1)

This project is the first large-scale experiment on matching operational forensic sketches—and the results have been impressive. “We improved significantly on one of the top commercial face recognition systems,” says Klare. “Using a database of over 10,000 mug shot photos, 45 percent of the time we had the correct person in the top 50.” All the sketches fed to the matching system were from real crimes where the person was later identified; a race and gender filter also was used to improve the matching accuracy and to speed up the search. This research project and its results were published in the March 2011 issue of the prestigious journal *IEEE Transactions on Pattern Analysis and Machine Intelligence*.

Klare is the first to say that more work needs to be done in this area. “This is a step in the right direction in an important area of pattern recognition,” says Klare. “A system specifically designed for this problem is what is needed. With more effort this could be a very valuable tool for law enforcement.”

Future stages of the project are planned to improve its accuracy and user interface. Several law enforcement agencies have agreed to deploy the system developed by Klare in order to try it in real-world situations.

“We are trying to get computers to replicate some of the common things we do, like seeing things.”

— Brendan Klare, CSE PhD student

Klare’s bachelor’s and master’s degrees were in computer science. As he was deciding what area to pursue for a doctorate degree, Klare became fascinated with pattern recognition and computer vision. “We are trying to get computers to replicate some of the common things we do, like seeing things,” says Klare. He is enjoying the opportunity to work under Jain, one of the leading experts in not only face recognition, but biometric technology in general.

Klare is in this third year of work on his doctorate. He hopes to complete his dissertation soon, and then he would like to continue with biometrics research, probably with the federal government.

“Sketch recognition is one of several exciting projects related to law enforcement currently being investigated in the PRIP Lab,” says Jain. “Other projects deal with latent fingerprint matching; latent palm print matching; face recognition in surveillance video; use of scars, marks, and tattoos (SMT); and detection of fingerprint obfuscation. We are grateful to the Michigan State Police, the FBI Biometrics Center of Excellence, and the National Institute of Justice for supporting our research.”

Project descriptions and publications can be accessed at <http://biometrics.cse.msu.edu> 🌐

— Jane L. DePriest

CSE Professor Retires (continued from page 1)

activities designed to teach youth science, technology, engineering, and mathematics (STEM) skills. He currently chairs ITEC’s board of directors and teaches after-school courses.

While Stockman is retiring from the department, he is continuing with many of his interests, especially his long-term interest in how kids learn STEM skills. He hopes to do a second edition of the book *Computer Vision*, written with colleague Linda Shapiro of the University of Washington, and he will continue as an ABET program evaluator for computer science programs. Stockman also hopes to do some canoeing trips he couldn’t get done while full time at MSU.

Stockman’s wife, Ida, is a retired professor in the Department of Communicative Sciences and Disorders.

“MSU has been a great place for me,” says Stockman. “I was lucky to work with smart colleagues and students helping to bring computing from an esoteric practice to a commodity found everywhere in our society.”

“Professor George Stockman has had a powerful impact on CSE students throughout his career,” says Matt Mutka, chair of the CSE department. “He has been instrumental in shaping the direction of the department, and we are pleased that this impact continues as he remains engaged with CSE students and faculty through various projects.” 🌐

— Jane L. DePriest



Ida and George Stockman celebrate at a retirement party held in George’s honor by the CSE department.

Alumni Pipeline

Dean of Engineering at Wayne State



Farshad Fotouhi (PhD '88) has been appointed dean of Wayne State University's College of Engineering. Wayne State provost and senior vice president for academic affairs, Ronald Brown, who made the announcement, said Fotouhi is well-suited for the post.

"The College of Engineering is positioned to build on its already solid foundation of teaching and learning, research, and scholarship," Brown says. "Dr. Fotouhi has the experience and enthusiasm to increase the college's standing on both statewide and national levels, and I am pleased that he has accepted this important leadership role."

Fotouhi, who previously served as chair of the Department of Computer Science, has developed and implemented a series of comprehensive strategic plans. These have resulted in marked increases in national rankings and external funding, as well as recognition of improved research quality.

He will work with the college's staff to oversee the continued recruitment of top faculty and undergraduate and graduate students. At

Wayne State, Fotouhi says, students have an opportunity to pursue innovative specialties such as alternative energy technology, entrepreneurial engineering, and production management leadership. They also may participate in pioneering research activities and co-op programs as interns in local industry.

"I am excited to serve as the next dean of the College of Engineering, and look forward to meeting the challenges ahead and equipping our students with the skills to compete in tomorrow's workforce," Fotouhi said.

Fotouhi joined Wayne State University in 1988. Prior to being appointed chair of the Department of Computer Science, he was associate chair from 2000-2004 and a member of the faculty. He received a WSU College of Science Teaching Excellence Award in 1996 and several Best Paper Awards at various national and international conferences. Before joining WSU, he was a faculty member in the Lyman Briggs School at Michigan State University.

Fotouhi's research interests include biomedical informatics, the semantic web, and multimedia systems. He has published more than 180 papers in refereed journals and conference proceedings.

His research has been supported by the National Science Foundation, the National Institutes of Health, the National Institute of Drug Abuse, and Michigan Life Sciences Corridor, as

well as Ford Motor Company and other companies. While at WSU he has secured more than \$9 million in research funding and contributions.

Since joining WSU, Fotouhi has graduated 25 PhD and 30 MS students. More than half of his PhD graduates are tenure-track or tenured faculty at institutions in Michigan and across the country. Many of his graduates hold executive positions in industry and corporate America.

Best Paper Award

Karthik Nandakumar (PhD '08) is being honored with the 2010 IEEE Signal Processing Society Young Author Best Paper Award. The paper, "Fingerprint-Based Fuzzy Vault: Implementation and Performance," appeared in the *IEEE Transactions on Information Forensics* in December 2007.

The paper is authored by Nandakumar, who is currently at the Institute of Infocomm Research (I2R) in Singapore. Co-authors of the paper are Anil Jain, MSU University Distinguished Professor of computer science and engineering; and Sharath Pankanti, a research staff member of IBM's T. J. Watson Research Center and a PhD graduate in computer science from Michigan State University in 1995.

Nandakumar received the award at the 2011 International Conference on Acoustics, Speech and Signal Processing (ICASSP) in May.

Endowment Pipeline

Dr. Herman Hughes Spartan Scholarship Challenge



Herman D. Hughes, a former CSE faculty member, recently established an endowment at MSU: The Dr. Herman Hughes Spartan Scholarship Challenge. This endow-

ment will support a student who demonstrates financial need, and preference will be given to students who are committed to entering the College of Engineering and pursuing a major in either computer science or computer engineering.

Hughes joined the CSE faculty in 1973 and became a national and international leader in network traffic management and modeling with respect to wireless and high-speed networks.

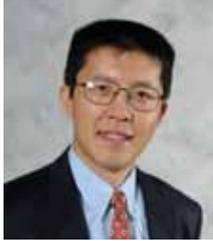
His exemplary contributions to research, teaching, and service earned him the MSU Distinguished Faculty Award in 2000.

After retiring from MSU in January 2005, Dr. Hughes became a visiting professor in the School of Electrical and Computer Engineering at Georgia Institute of Technology and was engaged in research and consulting. This involvement ended in August 2010. He now does consulting, along with writing his autobiography.

Faculty and Staff Pipeline

Withdraw Awards

Two CSE faculty members were honored with Withdraw Awards at the college's annual awards luncheon in March.



Assistant professor **Alex X. Liu** received the **Withdraw Distinguished Scholar – Junior Award** given to nominees with no more than seven years of service to the

university. Liu is an internationally recognized researcher in network security. His research focuses on developing high-speed algorithms for network security devices such as firewalls and intrusion prevention systems. He is considered a "rising star" in both the security and network research communities.

Since joining MSU's CSE department in 2006, Liu has established a research group that some say is "among the best in the world on firewall policy analysis." His work, which has yielded one awarded patent and nine pending patents, has the potential to make a huge impact on the computer network industry.

In recent years, Liu has greatly expanded his research area. His 2009 NSF CAREER grant focuses on the high-performance evaluation of access control policies. While a large body of research work has been done in this area, the performance issues in access control policy evaluation have not been well understood and have received little attention—until now. Liu's proposed research on building high-performance policy evaluation engines fills this gap. Successful completion of the proposed research will have

a significant impact on access control research and systems. He has become very successful at securing funding for his research. In 2010 alone, he obtained three awards from NSF, which is extremely unusual, even for senior faculty.

Liu is also a dedicated teacher and mentor who is committed to excellence. One PhD student says: "He always tries his best to guide me and other students through every perspective of our graduate study, and gives tremendous support to make us successful in both study and research."

Given the rapid changes in software development technologies, he always strives to introduce new topics into the undergraduate curriculum, and he redesigned his graduate course material to include many new security topics.

He has published two books and more than 60 scientific papers in leading computer science conferences and journals. "Being able to publish in such prestigious venues in several different areas of computer science in just four to five years as an assistant professor is a remarkable accomplishment," notes one colleague.

In addition, he is very active in providing professional services to his research community. He is an editor of the Elsevier *Journal of Computer Communications* (COMCOM), has served as a reviewer for various funding agencies, has been invited to give talks at a number of universities and at research labs such as Microsoft Research Asia, and has served on organizing committees and program committees for many premier network and security conferences. One colleague sums it up best: "I would expect him to become a super star in a few more years . . ."



Associate professor **Eric K. Torng** received a **Withdraw Teaching Excellence Award**. He is an enthusiastic instructor who displays a mastery of his subject material

and is able to convey course content clearly and concisely. One student says, "He was able to simplify complicated course material so that it was much easier to understand."

His courses in algorithms and theoretical computer science can be difficult and complicated. Says one student: "The course material was very tough; however, Dr. Torng made great efforts to give students extra assistance." They value the fact that Torng builds personal relationships with his students and is happy to meet with students both during and after office hours to provide one-on-one assistance. He is also known for creatively applying new technology in the classroom to enhance the learning experience. Torng is a third-time recipient of this award.

New Appointment



Anil Jain, University Distinguished Professor of computer science and engineering, has been appointed by the National Academies to a panel that evaluates

the Information Technology Laboratory of the National Institute of Standards and Technology (NIST). 🌱

Hughes and wife, Kay, have established endowed scholarships at four different institutions, and hope to do another one this year at Tuskegee University. These institutions were chosen based on Hughes' perception of their contributions toward his total professional development. As a way of saying thanks, and encouraging others to perpetuate his legacy (i.e. scholarship in computer science), Hughes and his wife are excited about giving back.

Doug Zongker Endowed Discretionary Fund for Computer Science and Engineering

Doug Zongker (BS '96) recently established an endowment through the College of Engineering for the CSE department: The Doug Zongker Endowed Discretionary Fund for Computer Science and Engineering. This endowment will be used for the Department of Computer Science and Engineering at the discretion of the department chair, or for any future successor MSU unit.

Zongker is a senior staff software engineer at Google, working on an over-the-air update system for the Android mobile phone operating system. He joined Google in 2003 after receiving a PhD from the University of Washington, working with David Salesin in computer graphics.

He set up the endowment as a way of giving back to the department. "I liked the idea of the discretionary fund giving the CSE department the flexibility to spend the proceeds on whatever was useful," Zongker says. 🌱

Student Pipeline

Microsoft Research Graduate Women's Scholars



Lacey Best-Rowden, a first-year PhD student in the Department of Computer Science and Engineering (CSE), has been selected as a Microsoft Research Graduate

Women's Scholar. She is one of 10 scholarship winners from across the United States and Canada.

This prestigious award, sponsored by Microsoft Research of Redmond, Wash., is a one-year scholarship for outstanding women graduate students and is designed to help increase the number of women pursuing PhDs. The program supports women in the second year of their graduate studies and includes \$15,000 for the 2011-2012 academic year and a \$2,000 conference and travel allowance.

Best-Rowden, from Lansing, Mich., has a bachelor's degree in computer science and mathematics from Alma College. Her area of research for her PhD is algorithms and theory with applications in computer networking. She chose MSU and the CSE department because she believed they best suited her interests. "The professors at MSU were committed to providing the best care for their graduate students out of all the schools I considered," says Best-Rowden.

"We are extremely proud of Lacey," says CSE associate professor Eric Torng, Best-Rowden's adviser. "This is a very competitive and prestigious fellowship, and Lacey is a most-deserving recipient." Best-Rowden also received the **National Physical Sciences Consortium Fellowship** from the National Security Agency.

In the fall of 2010 she was awarded the **Carl V. Page Memorial Graduate Fellowship**. Professor Page was a pioneer in computer science and artificial intelligence research and was one of the first faculty members in the CSE department. The purpose of the fellowship is to honor Dr. Page's dedication to graduate education with recipients selected on the basis of a demonstrated interest in and aptitude for computer science studies.

Extra Mile Leadership Award



Cassi Miller



Kathryn Bonnen

Cassi Miller and **Kathryn Bonnen**, both seniors in computer science, received the **Women in Computing Extra Mile Leadership Award**. This award, presented at an awards banquet hosted by the Society of Women Engineers, acknowledges people who have given above and beyond the call of duty in various activities. This is the second year that the award has been given.

Bonnen also received an **Outstanding Member Award** that was sponsored by USAA.

Outstanding Graduate Student

David B. Knoester, a doctoral student with a dual major in computer science and engineering and ecology, evolutionary biology and behavior, was named the **2011 Computer Science and Engineering Outstanding Graduate Student**. His thesis title is "Evolution of Distributed Behavior." This research focuses on the evolution of distributed computer systems and computational evolutionary biology. "I have specifically focused on using evolutionary algorithms and related ideas from evolutionary biology to discover and inspire new approaches to solving problems in distributed computing systems," says Knoester. He successfully defended his thesis in April and received his PhD in May. CSE professor Philip McKinley is his adviser.

Knoester is part of the Digital Evolution Lab (Devolab) and the Software engineering and Network Systems Lab. Originally from Grand



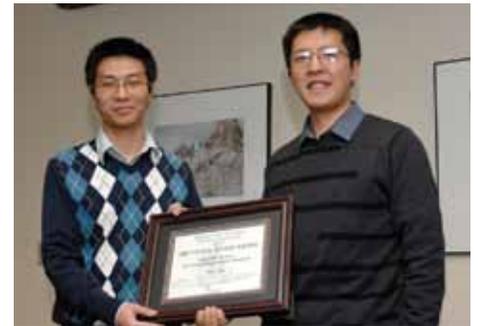
David Knoester (left) received his award from CSE chair Matt Mutka.

Rapids, Mich., he earned a BS in computer engineering at the University of Michigan and an MS in computer science at MSU.

Outstanding Diversity Programs Award

Jazmine Gaymon, a CSE sophomore, received an Outstanding Diversity Programs Award at an awards banquet hosted by the Society of Women Engineers in February. Gaymon's award was sponsored by The Nielsen Company. These awards are presented to students who are active in Diversity Programs Office activities and student groups. Students must apply for the awards and award winners are chosen by committee for the quality of their overall application and dedication to the organization in which they are involved.

Fitch Beach Award



Fei Chen (left) receives an honorable mention award in the Fitch Beach Award competition from CSE assistant professor Alex Liu.

Fei Chen, a CSE doctoral student, received honorable mention in the **Fitch Beach Award** competition. His primary area of research is computer and network security, with an emphasis on improving the performance, privacy, and security of systems, networks, and databases, including improving the performance and security of firewalls. Chen's dissertation work focuses on policy-based computing and privacy-preserving computing, two fundamental perspectives of computer and network security. CSE assistant professor Alex Liu is his adviser.

Exceptional and Distinguished Service



Dianna Kay, CSE senior, received an **Exceptional and Distinguished Service Award** for her service to the department, the college, and MSU. She was nominated by CSE

professor Laura Dillon. The award was presented at an awards banquet hosted by the Society of Women Engineers in February.

Kay, from Dayton, Ohio, is president of MSU Women in Computing and has been active in that organization and others throughout her college career. She is the daughter of Dave and

Stella Kay. Kay will graduate in December 2011. This summer she is working at Microsoft in Seattle, Wash., doing quality assurance testing for the ads on the Bing decision engine. Kay's senior advice: "Have side projects that you like working on. You learn a lot from side projects, and they make great conversation topics when you're interviewing; especially if you're doing it in your free time, you're (hopefully) passionate about it."

Distinguished Service Award

Devan Sayles received a Distinguished Service Award at an awards banquet hosted by the MSU Society of Women Engineers. CSE professor Laura Dillon nominated Sayles for the award.



Sayles is from Livonia, Mich., and is the daughter of Patrick and Michelle Sayles, both MSU alumni. She is active in many organizations in engineering and across campus, including Women in Computing and the Spartan Marching Band. Sayles will graduate in May 2012. 🌱

2011 Design Day

The MSU College of Engineering Design Day, held April 29, was a resounding success. As part of the day, 12 CSE student teams competed for four awards, which were conferred by a panel of judges. Winners of the awards were the teams working on projects for The Boeing Company,

Medtronic Inc., Raytheon, and Sparrow Health System. Professor Wayne Dyksen oversees the CSE capstone projects.

More information about Design Day and the winning teams is available at www.capstone.cse.msu.edu.



One of the hallmarks of CSE 498 capstone projects is that of praxis, the process of putting theoretical knowledge into practice. The CSE capstone team that engineers the software system that is the most technically challenging is recognized with the Chrysler Praxis Award, which is sponsored by Chrysler Group, LLC of Auburn Hills, Mich. The team sponsored by the Boeing Company received this award. Team members from left are Andrew Kos, Grosse Pointe, Mich.; Steven Garske, Bay City, Mich.; Eric Muller, Novi, Mich.; and Adam Cook, Shelby Township, Mich.



The TechSmith Screencast Award goes to... the CSE capstone team with the best project video. The award is sponsored by the creators of Camtasia Studio, TechSmith of Okemos, Mich. This year that was the team sponsored by Medtronic, Inc. Team members included from left: Caitlin Russ, Sterling Heights, Mich.; Evan Francis, Grand Rapids, Mich.; Christopher Paterson, Muskegon, Mich.; and Michael Holp, Lansing, Mich.



The capstone team that delivers the best overall capstone experience is recognized with the Urban Science Sigma Award, which is sponsored by Urban Science of Detroit, Mich. The team sponsored by Sparrow Health System received this award. Team members from left are: Dianna Kay, Dayton, Ohio; Ryan Hewitt, Livonia, Mich.; Brett McMillen, Clarkston, Mich.; Maurice B. Wong, Grand Rapids, Mich.



The CSE capstone team with the best overall Design Day performance is honored with the Auto-Owners Exposition Award, which is sponsored by Auto-Owners Insurance of Lansing, Mich. The team sponsored by Raytheon received this award. Team members from left are: Srinivasa Settaluri, Visakhapatnam, India; Matt Bowser, Holt, Mich.; William Bonner, West Bloomfield, Mich.; and James R. Voss, Beavercreek, Ohio.

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Board of Trustees Award

At the April 15 MSU Board of Trustees meeting, 33 students, including CSE student **Steven Garske**, received Board of Trustees Awards for having the highest scholastic average at the close of his or her last semester in attendance at Michigan State University. They all received a 4.0 GPA.

This semester's number of recipients is the most in the award's history, which dates back to 1921. The students were also be recognized at their respective spring commencements May 6-8.

Garske, of Bay City, is the son of Jackie and Michael Showalter of Bay City and Mark Garske of Saginaw. He is a graduate of All Saints Central High School.

High-Achieving Student Recognition

Congratulations to 11 high-achieving CSE students. Students with the highest grade point average in each engineering department and program were recognized for their academic efforts at an awards banquet hosted by the MSU Society of Women Engineers in February. CSE students recognized were **Brandon Alberts, Nikhil Andrews, Elizabeth Bartos, Steven Gacki, Steven Garske, Nathaniel Henry, Tina Isaac, Devan Sayles, Robert Vorce, Brandon Waterloo, and Kyle Woodward.** 🌟