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Read Full Story

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Dr. Sam Ramrattan earns prestigious award from cast metals society
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WMU assistant professor receives $500,000 NSF CAREER Award

Dr. Fahad Saeed, a Western Michigan University faculty member in the College of Engineering and Applied Sciences, was named a recipient of the highly prestigious, 5-year, $500,000 CAREER award from the National Science Foundation (NSF). He is an assistant professor in both the Department of Computer Science and the Department of Electrical and Computer Engineering.

NSF CAREER awards are the National Science Foundation's most prestigious awards for junior faculty and these highly selective grants are given to junior faculty members who are likely to become academic leaders of the future. Awardees have the flexibility to explore unexpected new terrain uncovered in the course of their research.

Saeed’s grant will be used to lay a foundation for fast algorithmic and high performance computing solutions suitable for analyzing big proteogenomics data sets. He plans to involve both undergraduate and graduate students in the research, as well as develop an outreach program for K-12 students.

“We are very proud of Dr. Saeed and his accomplishments,” said Dean Houssam Toutanji. “This CAREER Award exemplifies the quality of our faculty here at Western’s College of Engineering and Applied Sciences. Dr. Saeed’s research is groundbreaking and will be important to the fields of computer science and computer engineering.”

Saeed joined WMU in 2014. His research interests include parallel and distributed algorithms and architectures, computational proteomics and genomics, and Big Data problems in computational biology and bioinformatics. He is the director of the Parallel Computing and Data Science Laboratory and the founding co-director of the Center for High-Performance Computing and Big Data at WMU.
Earlier in his career, Saeed was a post-doctoral fellow and then a research fellow in the Systems Biology Center at the National Institutes of Health (NIH). He received his Ph.D. in the Department of Electrical and Computer Engineering from the University of Illinois at Chicago. For his exceptional research productivity, he was awarded the Fellows Award for Research at NIH for the year 2012 and Outstanding New Researcher Award at WMU in 2015.

**Entrepreneurial engineer wins Brian Patrick Thomas Award**

Amber Delgado, a student entrepreneur and industrial and entrepreneurial engineering major, is the recipient of the third annual Brian Patrick Thomas Entrepreneurial Spirit Award for her device that provides a portable workspace when working with blueprints and other large documents.

Delgado received the $10,000 award for her invention, BlueBoards, which creates a work surface that allows architects and others to work with large prints in the field. The award is given annually to a company in Starting Gate, WMU’s student business accelerator that helps students with promising ideas develop startup companies.

Delgado’s invention was born out of her own experience while she was interning at Perrigo and needed to write on blueprints and other plans when she was working on projects in the plants. Without a work surface, the prints were awkward to hold and difficult to write on, resulting in crumpled plans and sloppy writing. When Delgado went to research a solution that kept plans organized and provided a hard writing surface, she found that there were no good, affordable options on the market. Surprised, she began doing further research and decided this was a problem she could tackle.

"I became inspired by the idea that I could create something that would be useful to others," Delgado said. She interviewed 50 potential customers, created a prototype, developed a business plan, and filed for a provisional patent.

She plans to use half of the award monies to produce 50 prototypes and get these out to her customer test list and join Kzoo Makers, a Kalamazoo maker space.

"The Starting Gate program has given me so many opportunities, and now with this financial backing, I can move my business even further down the path to success," Delgado said.
Brian Patrick Thomas is an alumnus of WMU who earned his degree in industrial marketing in 1996. As CEO of OtterBox, Thomas was responsible for leading global expansion efforts and was the chief visionary in positioning OtterBox as an innovation technology company.

During his tenure, Thomas grew the company from $2 million in revenue to over a $1 billion multinational industry powerhouse. Thomas is currently an angel investor, mentor, and growth strategist for more than 14 startups.

**Formula SAE team competes at Michigan International Speedway**

WMU’s Formula SAE team recently returned from the SAE International Collegiate Design Series at Michigan International Speedway, where they competed with their new 2017 Bronco Racing vehicle against teams from all over the world. Of the 120 teams at the event, WMU’s team placed 35th in acceleration and autocross, 50th in skidpad, 26th in cost, and 64th overall. The team’s overall ranking would have been higher had a chain not broken during the first few laps of the endurance portion of the competition.

This year’s preparation for competition had a twist. In a unique collaboration, WMU team members opened their doors to a Formula SAE team from Brazil, and together, they shared lab space and worked alongside each other readying their cars for competition.

Read on for a first-hand account of this special collaboration.

*By Ramin Mirshab, Senior, Mechanical Engineering, Formula SAE Engine Team Leader*

Our visitors were from the University of São Paolo and were representing the “Escola de Engenharia de São Carlos.” They were ranked number 12 in the world, which is higher than any team is ranked in the entire Midwest. They mainly compete in the Formula SAE Brazil competition, where every year the number one winner of that competition goes on to compete at FSAE Michigan, which is the largest FSAE event in the world.
The way that we got to host them is after one of their members made a post in the “Formula SAE World” Facebook group stating that they were coming to the US and looking for a place to stay. I talked about the opportunity with Evan Weese, project manager for our team, and we thought it would be great to open our doors to them since the University embraces cultural diversity and we thought it would be a unique experience. After getting the necessary approvals, we went ahead and invited them here.

All 20 of their team members showed up May 4. Coincidentally, their car had arrived in a giant crate that same day at the paper plant at Parkview. We moved the vehicle to the projects lab where we spent the next two weeks working side by side before competition.

The experience was absolutely amazing. We got to see how a well-refined team operates and were able to form a bond with every one of them. The atmosphere was positive and friendly and gave us further motivation to finish our car for the competition at MIS. While they were here, we spent about 95 percent of the time on the cars and 5 percent of the time showing them places and things that they might not have in Brazil. Their favorites included Bell’s Two Hearted beer, after we went downtown to the Kalamazoo Beer Exchange together, Harbor Freight and Gale’s True Value Hardware. They did have a car while they were here and made some discoveries of their own. They couldn’t believe Little Caesar’s pizza was just $5. And Costco and Walmart absolutely blew their minds.

Once it came time to go to competition, we loaded both cars in our trailer and arrived at the competition site where we requested paddocks next to each other and the good times continued. In fact, it was very bittersweet saying goodbye for both teams because we knew that for many of us it might be the last time we would see each other. The instant friendship that formed by sharing the struggles, excitement and love for building FSAE cars had made us very close in a short amount of time. However, a few of the team members will be coming back to work in the US and we have already arranged to meet up with them and hang out outside of the FSAE world.
$318,000 grant will support research efforts of Department of Defense

Dr. Kristina Lemmer and Dr. Claudia Fajardo recently were awarded a $318,000 grant to be used in research in labs in the mechanical and aerospace engineering department. The award from the Defense University Research Instrumentation Program will be used to purchase equipment that will help understand complex ionization processes, combustion processes and fluid decomposition. The equipment also will be used to educate engineers and scientists in using state-of-the-art laser diagnostic and imaging equipment.

Grants from the Defense University Research Instrumentation Program are used to acquire major equipment that supports current research or develops new research capabilities that support research relevant to the U.S. Department of Defense. At WMU, the funds will be used to purchase two systems -- a tunable dye laser pumped by a solid-state diode laser and an intensified charge coupled device (ICCD) camera. Combined, the systems will give WMU the capability to perform a variety of optical diagnostic techniques including high-resolution absorption, laser-induced fluorescence, multi-photon spectroscopy and Raman spectroscopy.

“This is a significant grant for research that can have a far-reaching impact on some of the initiatives of the Department of Defense,” said Dr. Koorosh Naghshineh, chair of the Department of Mechanical and Aerospace Engineering. “The work of Dr. Fajardo and Dr. Lemmer exemplifies the kind of cutting-edge research we are doing here at the College of Engineering and Applied Sciences.”

The equipment primarily will be used to study the ionization processes for alternative propellants used in electric propulsion systems in the Aerospace Laboratory for Plasma Experiments,
Aerospace engineering students compete in annual Design Build Fly Competition

Six members of WMU’s Pegasus Chapter of the American Institute of Aeronautics and Astronautics (AIAA) went to new heights recently when they competed in the Design • Build • Fly competition in Tucson, Ariz., and came in 21st of more than 95 teams.

The AIAA holds an annual competition that gives university engineering students a real-world aircraft design experience.

Student teams design, build and then demonstrate the flight capabilities of an unmanned, electric powered, radio controlled aircraft. Each year, the design requirements and mission profile are updated to include specifications for the aircraft, payload required, types of missions, and number of laps. The teams are judged on their design, flight handling and performance, and whether the aircraft is practical and affordable to manufacture. This year, the aircraft had to fold and fit into a launch tube and carry hockey pucks.

“We were very happy with the final aircraft,” said Tyler Wall, 2016-17 president of the Pegasus chapter and a graduate student in aerospace engineering. “We built and flew three aircraft in total, each incorporating design improvements and better building techniques over the last model.” He said the final plane was a departure from the team’s traditional design. “We studied different motor and propeller combinations and new manufacturing techniques to make the plane as light and efficient as possible,” he said. The plan completed all four required missions – a first for the team since 2014.
“This competition demonstrates that good engineering is a combination of theory, calculations and real-world practicality,” Wall said. He credited the plane’s performance to a mix of the team’s long history with the RC model aircraft and engineering studies at WMU. “We were able to make a well-rounded aircraft that impressed many of the judges – including an astronaut who was there,” he said.

**Partnership will lead to WMU engineering degrees for Aquinas students**

Beginning this fall, Aquinas College students will be able to select engineering as their career goal and earn a bachelor's degree through Western Michigan University's College of Engineering and Applied Sciences.

A partnership between Aquinas and WMU announced May 3 means that Aquinas students can spend their first two years earning an Associate of Arts degree from Aquinas and then continue seamlessly on to earn a bachelor's degree in industrial and entrepreneurial engineering through a WMU program based at the college. The program is the first of several engineering majors already planned as future degree offerings.

"This innovative partnership will help students reap the benefits of an Aquinas liberal arts education while also taking advantage of the resources, technology and engineering faculty that WMU has to offer," says Dr. Juan Olivarez, president of Aquinas. "With a partnership like this, the ultimate winner is the workforce, as our two institutions team-up to produce graduates who have the skills and experience for in-demand engineering careers with the well-rounded background of an Aquinas education, grounded in Catholic and Dominican values."

Students may apply for acceptance in the engineering program at the end of their sophomore year. General education and engineering prerequisites will be taught by Aquinas faculty, while WMU faculty will teach engineering courses. General education, pre-engineering and some engineering courses will be taught at Aquinas or at the WMU-Grand Rapids campus for the first five semesters of an enrolled student's pathway. Semesters six and seven and the summer between them will be primarily taught on the WMU campus in Kalamazoo.

"The strength of Aquinas's math and science curriculum is an enormous asset for this initiative," says WMU President Dr. John M. Dunn. "That strength and the fact that both institutions share a
commitment to ensuring all students graduate with a broad-based liberal arts background made this partnership a natural fit. We'll be preparing young people to bring the best of both worlds to their professional lives, and they will be ready to immediately contribute to the needs of our region, state and nation."

Aquinas tuition rates will apply for the first two years, as students earn their associate degrees. WMU's tuition rate for Extended University Programs, which is lower than Aquinas's rate, will apply for engineering course work once the student is accepted into the program, making the path an exceptional value for Aquinas students.

Graduates of WMU's College of Engineering and Applied Sciences enjoy an overall 92 percent success rate after graduation and go on to graduate school or employment at some of the nation's top companies. A recent CNBC story ranked industrial engineering as one of the nation's top five highest-paying college majors.

Dr. Steven E. Butt, chair of WMU's Department of Industrial and Entrepreneurial Engineering and Engineering Management, says the degree program that will be offered at Aquinas is a traditional engineering program with an entrepreneurial engineering focus in which engineering design, creativity and innovation are emphasized. Students in the program have the opportunity to solve real world problems in a practical setting.

"Students learn how to bring real products and services to market," he says. "And they learn how to market and sell their product ideas."

Academic officials at both WMU and Aquinas have been working for two years to put the program in place at Aquinas. Butt says he expects some Aquinas enrollees will also take advantage of the fact that WMU offers an accelerated master's degree in the discipline, allowing undergraduates to begin taking graduate courses during their junior and senior years.

"We're hoping to see a few students go into our graduate program. They'll be able to continue and complete their studies in Kalamazoo or at our WMU-Grand Rapids facility," he notes.

Once the industrial and entrepreneurial engineering program is underway at Aquinas, officials at both schools plan to turn their attention to a civil engineering degree program that is nearly ready to roll out at the college.

For more information about the new engineering degree option, including how to apply, visit aquinas.edu/engineering, or by contacting the Aquinas admissions office at (616) 632-2913.
Ramrattan earns prestigious award from cast metals society

Dr. Sam Ramrattan, professor in WMU’s Department of Engineering Design, Manufacturing, and Management Systems, was awarded the British Foundry Medal for 2017 for his technical paper titled “Non-standard tests for process control in chemically bonded sands.” The article appeared in the March 2016 issue of the Foundry Trade Journal International. The award is being presented by the Institute of Cast Metals Engineers. Ramrattan was invited to attend the institute’s annual award luncheon in the United Kingdom this October.

“This is very good news and a prestigious award that reflects Dr. Ramrattan’s outstanding work,” said Dr. Steve Butt, department chair. “Dr. Ramrattan is a world-wide leader in metal casting research and continues to make many contributions to the field that have an immediate impact.”

In addition to teaching and research, Ramrattan runs WMU’s metal casting lab, which provides a superlative student-centered metal casting experience in an environment unparalleled by other colleges. The lab is equipped with machinery, tooling, hardware and software to help students design, produce and test a wide range of cast metals and cast metal matrix composites.

College to offer Ph.D. in civil engineering

The Western Michigan University Board of Trustees at its April meeting approved a new Ph.D. program in civil engineering. The program will be launched in fall 2017. This brings to seven the number of Ph.D. programs offered in WMU’s College of Engineering and Applied Sciences.

“We are pleased to be able to expand our offerings to include a rigorous doctoral program in civil engineering,” said Dr. Osama Abudayyeh, chair of the Department of Civil and Construction Engineering. “There has been continued interest in having a program in the college that addresses new and emerging areas of research in civil engineering.”
He said the program will prepare graduates to enrich the civil engineering profession through teaching, research and practice. “We are committed to producing graduates at all levels who will provide innovative solutions to civil engineering problems of regional, national and global significance,” he said.

Kline named to national board for engineering education

Dr. Andy Kline, associate dean for research and graduate education in the College of Engineering and Applied Sciences, was one of seven officers elected to the American Society for Engineering Education board of directors. He will begin his term during the society’s annual conference this month in Columbus.

The association was founded in 1893 and is the only national engineering education organization concerned with all engineering disciplines.

It is a leading voice in the community, authoring reports on transforming curriculum and transitioning veterans into engineering careers, among others; managing a large portfolio of fellowships and internships for the federal government; and publishing the world's premier journals on engineering education.

Kline came to WMU in 2001 and was appointed to his associate dean post in WMU’s engineering college in 2016. Previously, he was a senior research engineer and instructor at Michigan Technological University and as a postdoctoral associate at Cornell University.

He has published over 40 peer-reviewed journal articles and conference proceedings in the areas of materials science, physical property measurement and estimation, engineering process design, engineering education, and service learning in engineering.
At WMU, Kline is a tenured professor of chemical and paper engineering who has taught chemical engineering courses from the freshman through graduate level. His current research efforts in engineering and service-learning education are funded by grants from the National Science Foundation and Learn and Serve America.

Kline earned a bachelor’s and doctoral degree in chemical engineering from Michigan Technological University in 1987 and 1993, respectively.

**Concrete canoe team takes 4th place at regional competition**

Congratulations to WMU’s concrete canoe team, which came in fourth place at the regional competition for the North Central Region of the American Society of Civil Engineers this spring. WMU’s concrete canoe was blue – aptly named “The Blueprint” with the addition of powdered pigment added to the concrete mix.

Races included a men’s sprint, women’s sprint, men’s endurance and women’s endurance (each with two paddlers) and a coed sprint with a four-person crew. Teams also were judged on a technical presentation about the canoe and their display.

The steel bridge team also attended the competition, charged with constructing a scale-model bridge based on criteria established by the American Society of Civil Engineers and the American Institute of Steel Construction. The categories of competition included display, construction speed, lightness, stiffness, construction economy and structural efficiency. Bridges also were rated on overall performance.

WMU will host the ASCE’s North Central Regional Conference in 2018.