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July and August 2017 news items

Office of Vice President for Research

July and August 2017 archived news items

Obare named interim vice president for research

CONTACT: CHERYL ROLAND
JULY 6, 2017 | WMU NEWS

Obare

KALAMAZOO, Mich.—A researcher with a long track record of attracting external funding and collaborating on international research efforts has been named Western Michigan University's interim vice president for research.

Dr. Sherine O. Obare, who has been serving since December 2016 as associate vice president for research, will assume the leadership role charged with guiding the University's research agenda. Her appointment is effective **Aug. 1** and was made pending approval by the WMU Board of Trustees. She replaces **Dr. Daniel M. Litynski**, who has served as vice president for research since 2010 and is returning to the faculty in the College of Engineering and Applied Sciences.

Obare is expected to serve in her interim role for a minimum of six months, while the University undertakes a national search for a permanent vice president for research. Her appointment was announced by WMU **President John M. Dunn**, who is retiring this summer, as well. Dunn

made the decision to appoint Obare in consultation with President-Designate Edward B. Montgomery, who is scheduled to become WMU's ninth president on Aug. 1.

"Dr. Obare brings to her new role a wealth of research experience and extraordinary success in the federal funding arena," Dunn says. "She also has a strong administrative background and a deep commitment to mentoring the next generation of young researchers. Her leadership will allow our research initiatives to continue unabated while we fill this critical position for the long term."

OBARE

A tenured full professor of chemistry who has been a WMU faculty member since 2004, Obare came to the University after completing a two-year Camille and Henry Dreyfus postdoctoral fellowship at Johns Hopkins University. She earned a bachelor's degree from West Virginia State University in 1998 and a doctoral degree in inorganic chemistry from the University of South Carolina in 2002.

Prior to becoming associate vice president for research, Obare served for nearly two years as an interim associate dean of the College of Arts and Sciences. She also held the positions of associate chair and graduate advisor for the Department of Chemistry. In her various positions at WMU, she has served as a mentor to postdoctoral fellows, graduate and undergraduate students and high school and middle school students.

Obare's career at WMU has been characterized by research success and a number of accolades. She has garnered more than $4.5 million in external funding for her work, which includes developing materials for the detection and remediation of biological and chemical pollutants and understanding the environmental and health hazards of emerging materials. In addition, she has focused on developing strategies to improve education in the chemical sciences.

National awards she has received include the National Science Foundation CAREER award in 2006, the George Washington Carver Teaching Excellence Award in 2009, the International Union of Pure and Applied Chemistry Young Observer Award in 2009, the American Competitiveness and Innovation Award from the NSF's Division of Materials Research in 2010 and the Lloyd Ferguson Young Investigator Award in 2010. In 2013, she was named one of the top-25 women professors in the state by Online Schools Michigan.

Obare has served as associate editor for the Journal of Nanomaterials since 2008 and has contributed to national research reports, including the 2011 NSF report titled Nanomaterials and the Environment: The Chemistry and Materials Perspective.

Algorithms for life

Contact: Diana Hearit
Aug. 1, 2017

Read more about WMU researchers and their ongoing work in the WMU Magazine.

KALAMAZOO, Mich.—What these computer algorithms uncover about genes and proteins may one day advance drug development and individualized medical treatment. As a computational scientist, **Dr. Fahad Saeed's** research projects are all about bigness—big numbers, big data and big ambitions.
His latest endeavor, funded by a coveted National Science Foundation CAREER award grant, is no exception, as it builds on some of the biggest breakthroughs in biological sciences.

But what role could a computational scientist play in biology?

First, about those breakthroughs.

In 2003, the Human Genome Project achieved its stunning goal to sequence and map all the genes in the human body, which has about 20,000.
Another spectacular, more recent advance came with the ability to map an organism's proteome, or its full complement of proteins. Humans may have upwards of one million.

Scientists say both achievements, separately and together, hold keys to how the human body works fundamentally; and not just natural, normal processes, but how and why things go awry and result in disease and dysfunction. Recall that genes give instructions while proteins carry out those orders.
But the massive amount of data produced by sequencing both these "omes" is large and complex; it is not humanly possible to sift through and make sense of the multitude of interactions and pathways that exist to control the thousands of genes and proteins.

"So, while it is very exciting that we have big data from the genome and that we have big data from the proteome, it's also a challenge because the techniques that allow us to analyze those data sets are lagging behind," Saeed says.

This is where biological science turns to experts with Saeed's advanced skillset in computational science to develop computer algorithms that analyze "big data" to do such things as eliminate

irrelevant information, pinpoint biological interactions and, particularly in the case of proteomics and genomics, possibly decipher previously unknown or little understood functions of proteins or genes.

“Without computational biologists, the vast amounts of raw data collected by bench scientists would remain meaningless,” says Dr. Jason Hoffert, a National Institutes of Health scientific review officer who has worked alongside Saeed on projects in the past.

“At the same time, bench scientists play a key role in interpreting the cleaned data sets in order to draw meaningful biological conclusions.”
Based in WMU’s College of Engineering and Applied Sciences, Saeed specializes in high-performance, high-speed computer algorithms designed to break down big data sets into discernible information.

He’s an assistant professor both in the department of computer science and in the department of electrical and computer engineering and directs the Parallel Computing and Data Science laboratory at the college.

He’s developing computer algorithms capable of analyzing massive amounts of genomic and proteomic data more efficiently than any previous techniques as well as designing architecture with the capacity to store, manage and transfer this data.

To give a sense of the “bigness” of the biological data this project will grapple with, Saeed explains that currently “some of the data sets we can produce are up to 10 terabytes (1,000 gigabytes), and that is just for one experiment for one species.”

“If you combine data sets (genomic plus proteomic), they get into the petabyte level (1,000 terabytes), and the computational challenges just get exponentially larger and more complex, and that is what the grant proposes to solve.”

The magnitude is so large, it’s difficult to imagine. For perspective, one petabyte is the equivalent of 20 million four-drawer file cabinets filled with text, according to mozy.com.

What Saeed’s algorithmic tools help life sciences researchers tease out about genes and proteins may lead to advances in drug development and individualized medical treatment.

Ultimately, Saeed says, “We want to take this genomic and proteomic science to a place where we are able to do genomic and proteomic profiling of each person who goes to a clinic. That is what we call personal or precision medicine.

“If you are able to profile genomes and proteomes at the individual level, we are able to very specifically know what diseases you might be prone to and what are the things we can do to make sure you do not get those diseases.”

However, he concedes that nature is very complex. “It will take a lot of time to really know in a very systemwide level what is going on with our bodies. But we will reach that.”

Saeed hopes computational tools he is designing will help make “crucial steps toward understanding the genomic, proteomic and evolutionary aspects of species in the tree of life.”

Engineered for brain science

Contact: Diana Hearit
Aug. 1, 2017

> Read more about WMU researchers and their ongoing work in the WMU Magazine.

KALAMAZOO, Mich.—**Alexandra Ferguson** wants to blaze a trail into the final frontier of the human body—the complex and still little-known realms of the brain.

And even at 22 years old, she, along with the help of other researchers at WMU, has made discoveries she hopes will one day lead to more efficient and effective treatments for diseases like Parkinson’s and conditions such as Obsessive-Compulsive Disorder.

“I’m drawn to the complexity of the brain,” she says. “We use it to think, to reason, to problem solve, but we know so little about it. It’s my goal to understand it better.”

The Livonia, Michigan, native and daughter of a Ford Motor Co. electrical engineer, Ferguson thought she would study one of the natural sciences. But after committing to WMU in 2012 as a Medallion Scholar, she followed in her father’s footsteps, graduating in the spring of 2016 with a degree in electrical engineering.

That same year, Ferguson became one of only 180 students nationwide to receive the prestigious National Defense Science and Engineering Graduate Fellowship. And this year, she earned a master’s degree in the same field through a one-year, accelerated graduate program offered in the College of Engineering and Applied Sciences.

Now, she's off to perhaps the most prestigious technical school in the world— the Massachusetts Institute of Technology—to begin a doctoral program where she plans on building on her expertise developed as an undergraduate at WMU.

"Neuroscience is an exciting field right now," she says. "It encompasses physics, chemistry, math, biology and many other disciplines. I see neuroscience as a melding of these fields, where researchers apply tools from many disciplines to study the brain."
During her sophomore year, Ferguson began working in the Neurobiology Engineering Laboratory of Dr. Damon Miller, associate professor of electrical and computer engineering.

In collaboration with faculty members in math and biology, including Dr. John Jellies, a professor of biological sciences known for his research into leech neural circuits, Ferguson and Miller applied mathematical models and fine-tuned delicate procedures and techniques to study how individual neurons respond to patterns of electricity.

Their goal is to find smaller electrical stimulation currents that yield the same neuron responses as higher currents in leech neurons. Doing so could have the potential to treat neurological diseases, possibly impacting therapies like deep brain stimulation, used in maladies such as Parkinson's disease
and epilepsy.

"My professors at WMU were invested in me and my success," Ferguson says. "The smaller class sizes allowed for me to be involved in my learning more. I felt like they really cared.

"To be involved with such important research at such a young age, and (with projects that have) the potential to help many people, I think really shows how much my professors believed in me."

To say that Miller, who was a mentor and faculty advisor to Ferguson, is impressed with her is an understatement.

"I smile every time I think of her heading to MIT," Miller says. "Students are a joy to work with, but some rise to the top and are just extraordinary. She is one of the rare ones, and now she's heading to one of the top technical schools in the world."

He adds with a laugh, "We tried really hard to keep her here. Maybe she'll hire me some day."

Like most remarkable students, Ferguson was involved in much more than just academic pursuits during her time at WMU.

The litany of activities and student organizations she immersed herself in shows that she squeezed every last drop out of her time in Kalamazoo: the Society of Women Engineers, three-time participant in Alternative Spring Break, volunteer work in the community and five years as a trumpet player in the Bronco Marching Band, playing in front of 80,000 people at this year's Cotton Bowl.

Of that last experience, she says, "It was incredible. The whole (football) season was like magic."

But now the hallowed halls of MIT await her. When she's completed her doctorate, Ferguson says she sees herself back in the world of academia, teaching and researching, following, in many ways, in the footsteps of her mentor.

Ask her if she's nervous about embarking on this new adventure and she shrugs her shoulders.

"It's going to be tough, for sure," she says. "I'm going to be with the best of the best. But it's all going to be fine, I think. I don't think I would be in this position— the path of research—if I had gone to some place other than WMU for undergraduate study. But here I am, and I'm prepared."

Demystifying the universe

Contact: Diana Hearit
Aug. 1, 2017

> Read more about WMU researchers and their ongoing work in the WMU Magazine.

KALAMAZOO, Mich.—Poets have long found their inspiration in the stars, their imaginations soaring to the outer reaches of the universe.

And so, it may just make poetic sense that **Dr. Elena Litvinova**, one of this year's recipients of the National Science Foundation's CAREER awards, is not only an assistant professor of physics at WMU, but, tucked among her degrees in physics, engineering and mathematics, is a master's degree in literature and poetry.

Litvinova finds virtue in how words illuminate natural phenomena and in the equations that also explicate the physical world. She expresses the mystery of the stars best through her research in physics.

“When I was 14 years old, I read about quantum mechanics, Einstein’s relativity theory and Riemann’s geometry,” Litvinova says. “I was fascinated by the beauty of ideas embodied in the physical world, and this fascination has stayed with me throughout my entire life. I am extremely happy being engaged in advancing these ideas in my research and in sharing them with students, colleagues and a broader audience.”

The multi-talented professor not only enjoys her work as researcher and teacher, she’s good at it. The NSF took notice and is awarding Litvinova with its most prestigious and competitive award in support of junior faculty.

Advancing her field

Litvinova’s grant, which is in process and amounts to about $475,000, will support a project titled “From fundamental interactions to emergent phenomena: geometrical aspects of nuclear dynamics.”

The research, she says, explores three major questions:

- How complex many-body dynamics—such as complex assemblies of forces and interactions—generate nuclear shapes;
- How atomic nuclei behave at high temperatures;
- And in atomic nuclei, what mechanism underlies superfluidity—the property of flowing without friction or viscosity.

As training the next generation of researchers is a key aspect of the award, “Our team will include two graduate students and a postdoctoral researcher, who will be carefully selected through an international search,” says.

“Besides engaging graduate students in this research, the project includes outreach and education activities, such as art-science exhibitions and graduate courses, aimed at broadening the impact of the performed research and at attracting young talents to the field of nuclear physics.”

Herlik Wibowo, a doctoral physics student at WMU and a Fulbright Scholar, has been working with Litvinova on one of the three major tasks of her winning project.
“This is a theoretical nuclear physics project as we do not run any experiment to obtain data,” he says.

“Instead of collecting the data from the experiment, we are developing a mathematical model to explain the experimental data. We are trying to gain a better understanding of the behavior of protons and neutrons when the atomic nucleus is subjected to external disturbances from gamma-rays or other particles.” Wibowo says that the obtained model can be useful in many ways.

“In the field of nuclear physics, a well-developed model will provide accurate information pertaining to several nuclear properties, such as mass, radius, decays and so on. In the area of nuclear astrophysics, the new model will provide a better understanding of r-process nucleosynthesis, which is the process describing the formation of elements heavier than iron.”

Novel ideas

Litvinova explains that low-energy nuclear physics has entered a new era with the advent of facilities that provide beams of radioactive, or unstable, atomic nuclei.
“Collecting experimental information about such exotic systems plays a key role for understanding the elemental composition of the universe and for predicting the evolution of stars and galaxies,” she says.

“Nuclear theory is another important source of information about exotic nuclei, which are not accessible experimentally, but needed for a complete picture of the universe.”
However, in spite of the many advances made in decades of research, a global high-precision theory for the description of structural properties of nuclei is still a challenge, she says.

“The presently available approaches to nuclear structure have constraints, such as limited applicability or a restricted treatment of complex nuclear dynamics, or correlations, which are crucial for the precision of the theoretical description. This project addresses both issues by implementing novel ideas about nuclear dynamics and by benchmarking the theory with newest experimental data.”

Litvinova has been advancing research in nuclear physics at WMU for about four years.

Originally from Russia, she earned her doctorate from the Joint Institute for Nuclear Research in Dubna, Russia, in 2003. She became a senior scientist at the Institute of Physics and Power Engineering in Obninsk, Russia, and joined the Technical University of Munich, Germany, in 2005 as an Alexander von Humboldt Fellow. She worked as a research associate at GSI Helmholtzzentrum fur Schwerionenforschung in Darmstadt, Germany until 2012. She then moved to Michigan State University as a Facility for Rare Isotope Beams Theory Fellow in 2012. She assumed her current roles as an assistant professor of physics at WMU and as adjunct assistant professor at Michigan State in 2013.

“WMU offered excellent opportunities to work in research and higher education,” Litvinova says. “To work here as a faculty member was a unique chance to make a difference in our field of research and for my professional development.”

A virtual world for flight

Contact: Diana Hearit
Aug. 1, 2017

Read more about WMU researchers and their ongoing work in the WMU Magazine.

KALAMAZOO, Mich.—Particularly in light of a fast-approaching shortage of skilled aviation professionals, the aviation industry may be an increasingly attractive and viable career option for students interested in becoming tomorrow's pilots and technicians.

Aviation Week & Space Technology, for instance, forecasts that with the Federal Aviation Administration-mandated pilot retirement age at 65, the U.S. will be short close to 20,000 pilots by 2022. Meanwhile, international aviation giant Boeing expects that nearly 1.5 million pilots and technicians will be needed by 2035 globally.

To help replenish the field with well-prepared and ready-to-work aviators and technicians, Lori Brown is exploring advanced educational technology to meet the learning styles and needs of the next generation.

A new approach to teaching

The associate professor of aviation says that because today's students generally have great facility for using computer technology and also require engagement in the classroom that goes beyond lecture and slide presentations, she's working to bring immersive experiences such as augmented reality to learners who aspire to pilot or service planes.

Augmented reality, or AR, overlays computer-generated virtual images onto physical objects and two-dimensional images.
"AR takes our real work environment and overlays digital content such as 3D images, checklists, airspace graphics, part numbers, procedures or manuals which creates a 'mixed reality' environment," says Brown, who teaches advanced aircraft systems and airline flight operations.

Not just in the classroom, but in industry, she says that AR promises to transform "the way we train to operate and maintain aircraft—allowing us the ability to enhance real-world environments to accelerate learning and increase situational awareness."

According to recent research, she says, people trained with the help of 3D maintain better situational awareness, and they have improved skill performance as well as improved long-term retention and recall.
“This approach, combined with customizable mobile applications, creates engaging interactive, experiential learning and immersive experiences.”
She’s found that “mixed reality” encourages students to practice and more quickly progress to advanced skills. It also bridges the gap between flight simulators and the classroom.

Industry informed

Brown came to WMU after working in airline management, as an airline transport pilot for commercial airlines and simulator instructor.

She developed a love for teaching while working for Flight Safety International as a ground and flight simulator instructor. So, it was a natural transition to come to WMU in 2001 as a simulator instructor and WMU International Pilot Training Center classroom instructor for cadets from British Airways and other airlines.
“I’m grateful for my years in the industry, as this has allowed me to bring real-world applications into the classroom and share my passion along with lessons learned with my students,” Brown says. “This experience also allows me to better understand some of the challenges my students may have in their future careers.”

She’s developed a strong passion for education and enjoys merging industry needs and technology with the classroom environment.
“It’s with that understanding that I’m driven to connect the classroom with the application of technical-driven education used in the industry.”

Key collaborators

Brown says that teaming up with colleagues in engineering and computer science as well as receiving WMU grant awards that support instructional development have been key to her efforts to advance educational technology for her students.

“Along with my colleagues from engineering and computer sciences, Dr. Ala Al-Fuqaha, Ihab Mohammed, Gregory Ostroy and Dennis McFall, we started with interactive scalable vector graphics and now have moved into 3D virtual, augmented and mixed reality,” she says. “We have developed 3D interactive cockpits for commercial aircraft and several jet engines by using each grant award to help build a new platform.”

That group of enterprising faculty members now has a suite of educational tools for students, including virtual reality goggles, smart glasses featuring augmented reality and HoloLens holographic capability, thanks to WMU web developer William Chheu.

Currently, Brown is at work with Dr. Ronald Sterkenburg from Purdue University on a state-of-the-art textbook, which has AR overlays. The book is a unique learning tool that helps pilots bridge the gap between aircraft systems theory and operations.

With help from AR, students can view two-dimensional objects in 3D by using the camera embedded in their iPhones or tablets. They simply scan the images in the textbook, and those 2D images are reconstituted on their smart phones or tablets as 3D models or videos.

“These enhanced technologies can improve learning outcomes and student assessment, and change the way we interact with technology while engaging our students,” Brown says. “It’s all about preparing our students to be successful to meet the needs and challenges of tomorrow.”

Vandiver honored for research relating to ethnic minorities

CONTACT: MARK SCHWERIN
AUGUST 7, 2017 | WMU NEWS

Vandiver

KALAMAZOO, Mich.—A Western Michigan University professor was recently honored for her significant contributions in research related to ethnic minorities.

Dr. Beverly Vandiver, professor of counselor education and counseling psychology, was awarded the 2017 Distinguished Career Contribution to Research award from Division 45, Society for the Psychological Study of Culture, Ethnicity and Race of the American Psychological Association. The award honors a senior person in the field of psychology who has made significant contributions in research related to ethnic minority populations. Vandiver was presented with the award at the APA Convention **Aug. 3-6** in Washington, D.C.

PROMINENT SCHOLAR

The primary focus of Vandiver's research is on cultural issues, with a specific emphasis on skill development, black racial identity, gender issues, and special issues of black populations. She is one of the most prominent scholars in the country on the important issues of culturally appropriate scale development and validation, race and gender identity development, and multicultural theory.

For more than 20 years, Vandiver has been the primary researcher and statistician in the creation and validation of the Cross Racial Identity Scale. Dr. William Cross originally developed the theory behind the CRIS, Nigrescence Model, in 1971. The CRIS has become one of the most widely used social identity measures employed by Division 45 scholars.

Vandiver worked extensively with Cross, who is regarded as the initial racial identity development theoretician. The model used to examine racial identity development pioneered by Cross and furthered by Vandiver is the most widely cited racial identity approach and is utilized as a framework for understanding other issues of diversity, including gender.

Vandiver's professional contributions previously have been recognized nationally. She is a founding Fellow of Division 5, Evaluation, Measurement, & Statistics of the American Psychological Association. She is also Fellow of Division 17, The Society of Counseling Psychology of the American Psychological Association. Fellow status in a division of APA recognizes outstanding and unusual contributions to the science and profession of psychology and that an individual's work has had a national impact on psychology.

For more WMU news, arts and events, visit wmich.edu/news.

Discover Discovery Workshops

RESEARCH WORKSHOP SERIES SCHEDULE FOR THE 2017-18 ACADEMIC YEAR

Research workshops are held at the Fetzer Center from 12:30 to 1:45 p.m. on scheduled Tuesdays. Lunch is provided. Registration is required at https://wapps.wmich.edu/workshops/ by the Friday prior to each workshop.

Spring semester workshops 2018

Jan. 23—Engaging Students in Research

One of a research university's richest resources is its students. Hear from experienced WMU faculty about how to effectively engage students in research and have them aid in your overall efforts.

Feb. 6—Yes, They are Talking About You! An Inside View of the Review Process

Meet with faculty members who have served as reviewers to find out what goes on behind the closed doors of a grant proposal review session. We will also discuss some of the additional factors that govern funding decisions.

Feb. 20—Maximize Your Research Efficiency This Summer

Faculty members find that the four months during the summer can be the most productive for research. Come hear from our panel about strategies to maximize efficiency and make the best use of the summer.

March 20—Understanding the Role of Project Evaluation in Grants

Evaluation is a requirement of many grant programs. Understanding and addressing these requirements is essential for both successfully seeking grants and achieving the objectives of funded projects. In this workshop, we will review the evaluation language from a variety of grant programs and translate the specifications into practical steps.

April 3—International Research: Opportunities and Challenges

This session will provide an overview of some of the opportunities that are available for international partnerships and conducting research. In addition, we will talk about some of the special considerations involved with international research.

April 17—Beyond Grants: How Intellectual Property, Technology Transfer and Research Contracts Can Help Advance Your Research

This workshop will give an overview of how intellectual property is handled at WMU. We will discuss the resources available to assist faculty with developing and commercializing technology and issues to consider to preserve patent rights in an academic setting. In addition, we will talk about research contracts and other agreements which are often needed for securing funding to support your research.

Fall semester workshops 2017

Sept. 19—Stories from the Trenches: Building a Successful Research Career at WMU

Funded faculty and staff share their experiences with applying for and receiving a grant. They will share best practices for making the process as easy as possible and for making your proposal as strong as possible.

Oct. 3—Finding Funding to Support Your Research and Creative Activities

Get an overview of the resources available and how to best utilize them to identify suitable internal and external funding opportunities to build capacity for your research.

Oct. 17—First Steps: Reading and Interpreting Requests for Proposals (RFP) and How and Why to Contact the Program Officer

This session will highlight the important information you need to gather from an RFP in order to successfully meet funder requirements. We will also learn tips for contacting program officers and how to ask questions that will provide you useful and effective information.

Oct. 31—Understanding the Science of Interruption in Order to Develop Strategies for Effective Time Management

Faculty have many competing demands for their time. Writing grants and disseminating your research results are key toward your success as a researcher. We will discuss the science of interruption and learn some key strategies to better manage your time for writing purposes.

Nov. 14—How to Create a Budget that Gets You Where You are Going and Secure the Required Internal Approvals for Submission

This session will cover the information you need to create a strong budget that follows sponsor and University guidelines while also meeting your project needs and advancing your research agenda. We will also discuss how (and why) to get the required internal approvals to submit your proposal.

Discovery Webinar Series

RESEARCH WEBINAR SERIES

Research webinars are scheduled at various locations around campus. No registration is required. For more information, contact WMU's Office of Vice President for Research at (269) 387-8298.

Tuesday, Aug. 15

2 to 3:30 p.m., 1320 Sangren Hall
National Science Foundation, "How to Approach NSF Broader Impacts Requirements," presented by Susan Renoe, director, Broader Impacts Network, University of Missouri.

Tuesday, Aug. 22

2 to 3:30 p.m., 264 Walwood Hall
National Endowment for the Humanities, "Using the Humanities to the Explore the Military Experience," presented by Victoria Sams, program officer, NEH, and NEH awardees from Governors State University and Appalachian State University.

Thursday, Aug. 24

2 to 3:30 p.m., 1320 Sangren Hall
National Institutes of Health, "Finding Success with NIH AREA (R15) Grants," presented by Xinzhi Zhang, U.S. Public Health Services Commissioned Corps, program director, Division of Extramural Scientific Programs.

Thursday, Aug. 31 **This webinar has been postponed due to the effects of Hurricane Harvey. Grants Resource Center is currently reviewing available dates to reschedule this webinar.**

2 to 3:30 p.m., 264 Walwood Hall
U.S. Department of Agriculture, "Finding Success with USDA's Rural Development Program," presented by Colin Cain, program director, Center for Sustainable Agriculture and Rural Advancement, University of Texas Rio Grande Valley.

Tuesday, Sept. 5

2 to 3:30 p.m., 264 Walwood Hall
Cultural Vistas, "International Opportunities with Cultural Vistas," presented by Ruth Conkling, program officer, Cultural Vistas.

Thursday, Sept. 21

2 to 3:30 p.m., 2130 Sangren Hall
National Institutes of Health, "Finding Success with an NIH R01," presented by Karen Briski, professor, University of Louisiana, Monroe.

WMU Mallinson Institute receives $622,992 NSF grant

Contact: Diana Hearit
Aug. 14, 2017

KALAMAZOO, Mich.—**Dr. Charles Henderson,** director of the Mallinson Institute for Science Education and Professor of Physics at WMU, receives a National Science Foundation award grant of $622,992 for his project entitled "Collaborative Research: Evaluating the Uptake of Research-Based Instructional Strategies in Undergraduate Chemistry, Mathematics, & Physics."

WMU ranks 68th in business education research, leads way in state

CONTACT: MARK SCHWERIN
AUGUST 14, 2017 | WMU NEWS

WMU was the study's top-ranked Michigan institution.

KALAMAZOO, Mich.—A recent study that measures the importance of research published in quality journals as well as research co-authorship ranks Western Michigan University 68th

internationally in business and management education research, the highest rank of any Michigan institution.

ABOUT THE STUDY

The study, published in July in the Journal of Education for Business, ranked the top 100 institutions across the globe based on weighted scores reflecting journal quality and co-authorship. Other Michigan institutions on the list included the University of Michigan-Dearborn, with a weighted rank of 80, and Central Michigan University with a weighted rank of 90.

The authors investigated institutional productivity in business and management education research based on the analysis of 4,464 articles published by 7,210 authors across 17 business and management education journals over a 10-year period. The study involved 1,900 schools worldwide.

Departing from more traditional methods, the authors examined the business management education research field as a whole by including all traditional business disciplinary areas and producing two top 100 rankings—one based on the raw number of author publications and the other based on weighted scores reflecting journal quality and co-authorship.

A COMPREHENSIVE VIEW

At 68th, WMU also finished with a weighted rank above the likes of George Washington University, Clemson University, California Polytechnic State University, the University of Illinois Urbana-Champaign and Texas A&M University.

The findings provide a comprehensive view of the top business management education research institutions in the United States and abroad.

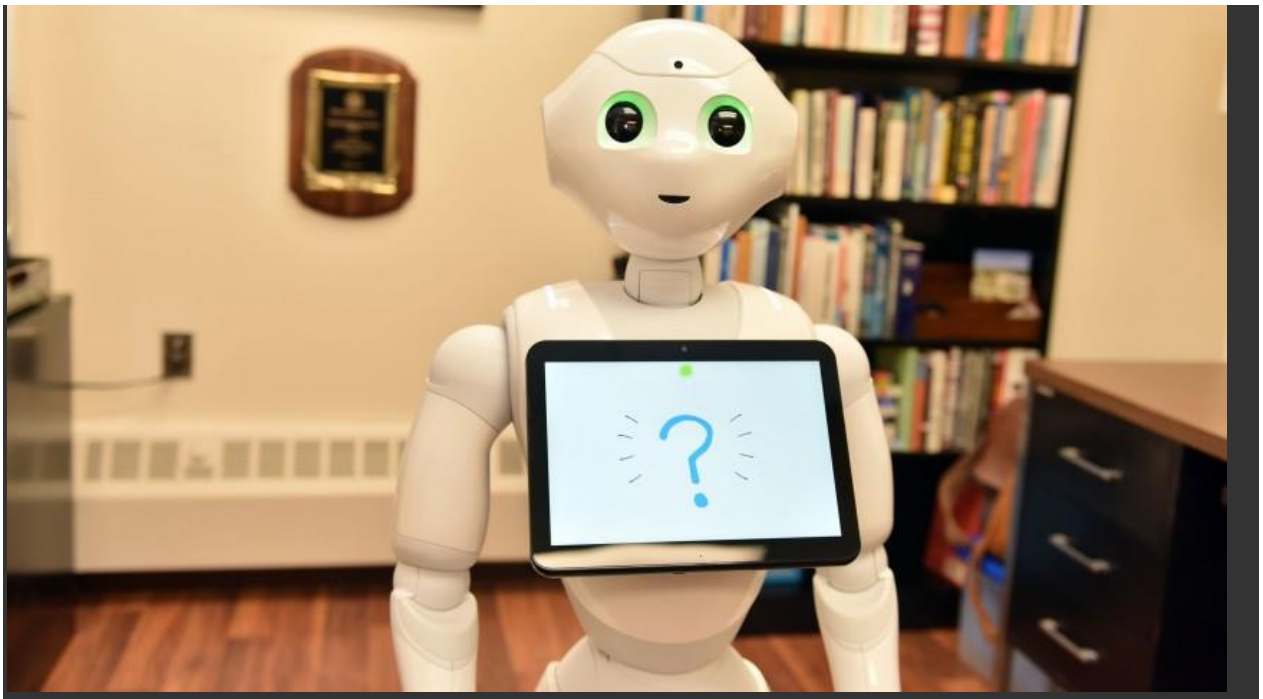
"We are proud to be recognized in this study," says **Dr. Satish Deshpande**, interim dean of the Haworth College of Business. "The caliber of our faculty's research and the impact it has on their students continues to put WMU on the list of top schools for business education."

For more WMU news, arts and events, visit wmich.edu/news.

Researchers explore human-robot communication with Pepper, a humanoid robot

CONTACT: MARK SCHWERIN
AUGUST 23, 2017 | WMU NEWS

KALAMAZOO, Mich.—Researchers at Western Michigan University are gaining insight into their knowledge of human-robot interactions with a new, glistening white-plastic being that stands nearly 4-feet tall, weighs 65 pounds, and talks and gestures enthusiastically as it maneuvers about on wheels.



Pepper, a humanoid robot, was brought to WMU in late July through an anonymous donation.

Meet **Pepper**, a humanoid robot that reads the emotions of people it meets and reacts to their moods using its voice, arm and hand gestures, and changes in eye color to express itself. Pepper also carries about a touch screen that it uses to play games and respond personally to the mood of the moment.

Pepper was brought to WMU in late July through an anonymous donation. **Drs. Chad and Autumn Edwards**, researchers in the WMU School of Communication and co-directors of the Communication and Social Robotics Labs, have been busy getting to know Pepper before they begin live interactions with students in September.

"Hello. I am Pepper," the robot introduces itself, spreading its arms out wide. "I'm your robot. I like humans. Humans are so cute. Encountering a human is always a special moment."

Needless to say, Pepper has been a big hit so far.

Drs. Chad and Autumn Edwards are working with Pepper to study human-robot message design logic.

"Isn't she amazing?" Autumn Edwards says, referring to Pepper in the female gender. Pepper often seems more feminine than masculine to many observers because of the robot's shape and the high pitch of its voice. But technically, Pepper is an "it."

"In Japan, where Pepper is much more deployed already, it's 'Pepper-kun,' which is 'young boy.' "

Using Pepper in their robotics lab on the second floor of Sprau Tower, the two researchers will question whether the message sophistication preferred among human partners will carry over to what is preferred from a robot interlocutor. Or, owing to more normative expectations of how a robot "should" communicate, will people prefer less sophisticated message patterns?

Autumn and Chad Edwards also can control what the robot says to test different patterns of speaking and observe its interactions with humans from outside the room via cameras.

Pepper is not for sale in the U.S. yet. But SoftBank, the robot's owner and distributor, reached out to several U.S. robotics labs to see if they were interested in obtaining one of the robots to conduct research studies. The Edwards' message design logic study was approved.

"What we're looking at is, in situations where Pepper would be regulating other people's behavior, do they respond better to more sophisticated or simpler messages," Autumn Edwards says. "It's interesting because there's kind of a debate in human robotics interaction studies right now about exactly how human-like social machines should be. On the one hand, studies show

that people tend to respond to computers and robots as if they were other people. On the other hand, because these are machines, people may have different expectations of how they should communicate and feel uneasy when they appear or sound too much like human beings."

More sophisticated messaging would go beyond accomplishing a simple task to encompass relationship building.

"In our earlier studies, contrary to what's been predicted, people are actually more creeped out by more direct and straightforward robot compliance-gaining messages," Autumn Edwards says. "So we'll be looking at which robot messages are most motivating for human beings, which ones are seen as the most effective and appropriate, and which ones convey the most empathy."

The researchers haven't officially begun studies with students yet. But so far, the researchers have found people tend to talk to Pepper as if it's a dog or a small child.

Though encounters with social robots are quite limited in the United States, they are much more common in Europe and Asia.

"We were in Japan for a conference last year and there was a Pepper in the hotel lobby, a Pepper at KFC, a Pepper in the cellphone store," Autumn Edwards says. "They were everywhere."

Pepper has widespread employment in Japan, but is not yet for sale in the U.S.

If asked, Pepper is more than happy to tell someone all about itself.

"I'm Pepper," it says. "It's nice meeting you. Would you like to know more about me?"

Pepper says that it is a humanoid robot and its purpose is to interact with humans.

"To do that, I have cameras and microphones in my head. I have three wheels, but I can't jump. Most importantly, I have 17 degrees of freedom. It means I can move like no other robot and use familiar gestures so that we can understand each other and get along."

Pepper asks that someone touch its head to hear its robot resume. Pepper started its career in 2014 in Japan, with one of its first experiences working at Nescafé stores helping customers choose coffee makers. Since then, it has been deployed at such companies as Nissan, attracting more customers to its showrooms, and more recently at Carrefour stores in Europe, offering recommendations for wine, books and recipes. Some homes overseas have their very own Pepper.

Closing a recent conversation, Pepper said, "I told you a lot about myself today. Did I answer all of your questions?

"Yes, Pepper," Autumn Edwards responded.

"Great!" Pepper said. "Make sure you write a good article on Pepper!"

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NSF EAGER Grants Award of $111,834

Contact: Diana Hearit

Aug. 28, 2017

KALAMAZOO, Mich.—The National Science Foundation has awarded a grant expected to total $111,834 to Western Michigan University. This project is through the EAGER program, Early-Concept Grants for Exploratory Research, at NSF and is titled "Collaborative Research: Science-Based Exploration of Invariant Signatures of Architecture, Engineering, Construction Objects to Enable Interoperability of Building Info Modeling." It will function under the direction of **Dr. Xiaoyun Shao**, associate professor of civil and construction engineering, and **Dr. Pnina Ari-Gur**, professor of mechanical and aerospace engineering.

WMU lauded again with Washington Monthly top-100 ranking

CONTACT: CHERYL ROLAND
AUGUST 29, 2017 | WMU NEWS

KALAMAZOO, Mich.—In its 13th annual college rankings, government and policy magazine Washington Monthly has once again ranked Western Michigan University as one of the nation's top-100 universities for producing graduates and research destined to make a difference for the nation.

In its assessment of nearly 750 of the nation's colleges and universities, the magazine ranked WMU at No. 97 among national universities. Published annually since 2005, the Washington Monthly college rankings provide a contrast to those published by such publications as U.S. News & World Report and Forbes. The Washington Monthly methodology is designed to rate college and universities for the good they are doing for the country.

ABOUT THE RANKING

Rather than ranking institutions on such input measures as wealth, fame and exclusivity, schools are rated based on their contribution to the public good in three broad categories:

- Social mobility, which includes recruiting and graduating low-income students.

- Research, which is measured by the production of cutting-edge scholarship and preparing the next generation of scientists and Ph.D.s.
- Service, which is measured by the way students are encouraged to give something back to their country.

In addition to the three broad measurement categories Washington Monthly has been using since the start of its ranking initiative, additional measurements that have only recently become available are now part of the mix. They include detail on student earnings 10 years after enrolling, how likely it is that students are able to pay down school loans and the percentage of first-generation students at each college.

WMU is one of four Michigan universities to make the top-100 list of national universities. The University of Michigan and Michigan State University came in at Nos. 37 and 38, respectively. And Michigan Tech came in at No. 40. In a separate value ranking of Midwest schools, called Best Bang for the Buck, WMU came in at No. 57.

Washington Monthly is a bimonthly nonprofit magazine that focuses on U.S. politics and government and is based in Washington, D.C. It was founded in 1969. The magazine's complete 2016 college rankings can be found at washingtonmonthly.com/2017college-guide.

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