



## Professor Receives Ford Motor Company Grant

Dr. Dan Simon recently received two research grants totaling \$300,000 from Ford Motor Company for the projects entitled “Ridesharing Optimization with Real-Time Multi-Objective Swarm Intelligence.”

This three-year research project will aim to address:

1. Ridesharing optimization includes multiple objectives, including minimization of total vehicle miles, minimization of total travel time, maximization of participant preference matches and maximization of number of participants. Also, ridesharing optimization is highly constrained due to individual route preferences, schedule preferences and personal constraints such as smoking versus non-smoking and male versus female.
2. Ridesharing optimization needs to match drivers and riders on short notice, or even during a commute; this is called dynamic ridesharing.
3. If ridesharing is to be successful, then it must be widely adopted, which means that the optimization problem will include an extremely large number of dimensions.

For more information on Dr. Simon, visit [academic.csuohio.edu/simond/](http://academic.csuohio.edu/simond/).

## Engineering and Urban Studies Faculty Receive GCRTA Award

The Greater Cleveland Regional Transit Authority (GCRTA) has awarded funding to Dr. Stephen Duffy, a professor in the department of Civil and Environmental Engineering (CEE) and director of CSU’s University Transportation Center (UTC); Dr. Nigamanth Sridhar, a professor of Electrical Engineering and Computer Science (EECS) and Dean of the College of Graduate Studies; and Dr. Nick Zingale, an associate professor in the Maxine Goodman Levin College of Urban Affairs. The project, funded for \$500,000, is titled “Implementing On-Board Sensor and Real Time Data Acquisition Capabilities in Transit Vehicles.”

The project team, which includes researchers from Case Western Reserve University via the CWRU/CSU Internet of Things Collaborative, will develop and evaluate on-vehicle sensor systems focused primarily on rail maintenance and bus emissions. These systems will be capable of transmitting, archiving and interpreting data from the sensors, and will also provide information for monitoring on-time performance and passenger wait time for GCRTA’s vehicles. For more information, visit <https://www.csuohio.edu/research/news/email/newsletter/volume6-issue1.html>.





## Invention Disclosure Pipeline

The United States Patent and Trademark Office has allowed the patent application of Dr. Wenbing Zhao, a professor in the department of Electrical Engineering and Computer Science (EECS). The invention, titled “Systems and Methods for Privacy-Aware Motion Tracking with Notification Feedback,” relates to a method and apparatus for monitoring the body motions of patient handlers in nursing homes and providing instant feedback if best practices are not followed. The technology will improve patient handlers’ wellness by reducing musculoskeletal disorders. For more information, visit <https://www.csuohio.edu/research/news/email/newsletter/volume6-issue1.html>.

## Internet of Things Collaborative

The IoT Collaborative (IOTC) announced the selection of five IoT Collaborative pilot grants for 2018. Over \$90,000 in funding provided by the Cleveland Foundation, Cleveland State University and Case Western Reserve University has been awarded to these projects. Each project will include at least one PI from each university. Among the five pilot grants, three projects involved EECS faculty members. See <http://www.csuohio.edu/research/news/email/newsletter/volume5-issue11.html> for details.



- Sunnie Chung (EECS) and Ming-Chun Huang (CWRU): “Protect Privacy in a Distributed Learning Platform with a Natural Language Processing Example”
- Haodong Wang (EECS), Philip Feng (CWRU) and Mark Griswold (CWRU): “Integrating Wireless Sensors and Data Streams into Virtual Reality of Smart Buildings”
- Chansu Yu (EECS) and Chris Papachristou (CWRU): “An Indoor Navigation and Localization System”



## Ohio Innovation Exchange

Dr. Zhiqiang Gao’s research has been selected to be featured on the Ohio Innovation Exchange. Industrial automation has been dominated by the PID technology for over a century until now. The new kid on the block is called active disturbance rejection control (ADRC), patented by Prof. Gao’s group at the Center for Advanced Control Technologies (CACT) and commercialized by the CSU spinoff company, LineStream, founded in 2008 and acquired by Danfoss in 2018. CSU received a royalty payment of \$100,000 this year and for years to come. Companies such as P&G, PPG and Samsung have also donated generously to support the cutting-edge research at CACT, leading to significant energy savings in server farms, thermal power plants, extrusion processes, motion controls and more. Visit <https://www.ohioinnovationexchange.org/> for more information.

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## Annual Research Day

The Washkewicz College of Engineering held its Annual Research Day on Oct. 19, 2018. The keynote speaker, Bill Eibon, director of technology acquisition for automotive OEM coatings at PPG, gave a great presentation related to research and innovation in industry. At the competition for best poster, Holly Warner won first place for her poster, "Contact/Tracking Control with Impulse-Momentum Sliding Surface and Terminal Sliding Mode." Warner's research enables a robot to replicate human gait, including the weight distribution of the human during ground contact. Her research will allow more realistic lab testing of prosthetic legs prior to human subject tests. Her research is supervised by Prof. Hanz Richter (mechanical engineering) and Prof. Dan Simon (electrical engineering), and is part of an NSF-sponsored research project. See <http://embeddedlab.csuohio.edu/prosthetics> for details.



PhD student Shubo Zhang, supervised by Dr. Hongxing Ye, won second place for his poster entitled "Necessary Condition for Transmission Line Congestion." This research project seeks to enhance the power system security with data-driven technologies. It could save tens of thousands of dollars in operation costs per day for real-world systems. The research outcome is being applied to Midcontinent Independent System Operator (MISO), the geographically largest power grid in the U.S.

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## Students & Events



### IEEE Circuit Workshop

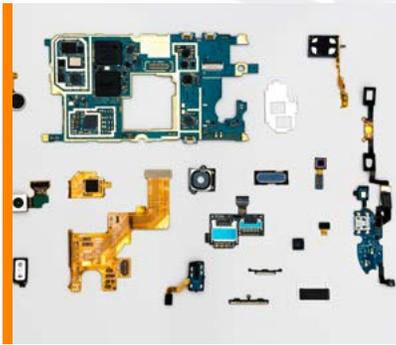
IEEE student officers Ryan Kall, Mark Travis and Brigid Rancour organized the IEEE circuit workshop on Nov. 17, 2018. Fourteen undergraduate and graduate students signed up for the event. Kall started the workshop with a presentation on the working principle and circuit configuration of a 555 timer circuit. Student participants implemented the timer circuit using discrete components and an IC chip. They also learned and practiced soldering skills on small electronic devices. The workshop involved not only electrical students but also mechanical engineering students. It improved students' hands-on skills, enriched their extracurricular life and achieved a combination of theoretical study and practice. Learn more about IEEE at CSU at <http://www.clevelandieee.org/student-branches>.

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### 2018 ACM Programming Contest

Computer science students Bailey Kremiller-Kocin, Myra Zaidi and Yiyuan Zhao attended the regional (East Central North America) competition of the annual ACM International Collegiate Programming Contest (ICPC), sponsored by IBM, on Nov. 8-9, 2018. It is a prestigious annual programming competition that involves thousands of fellow computer science (or computer engineering) students from around the world. CSU ICPC alumni mostly joined prestigious IT companies or pursued their graduate studies at top universities and research institutes. Visit <http://cis.csuohio.edu/~acm/index.html> to read more about CSU's ACM chapter.





## VEX Robotics Competition

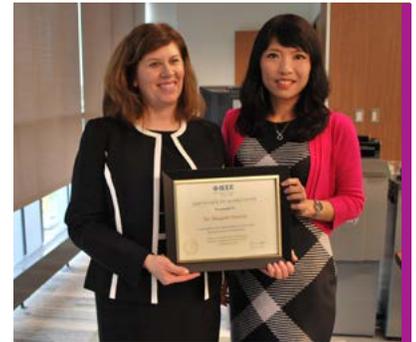
The student branch of the Institute of Electrical and Electronics Engineers (IEEE) at CSU formally presented details of the VEX Robotics Competition event to the Student Government Association. Jake Richey is the planning committee leader. The VEX Robotics Competition on Feb. 2, 2019, will benefit the entire student body, including, and not limited to, inspiring young individuals and future college students. This event offers unmatched skill application for all students: middle school, high school and college level. For example, college students studying film are encouraged to volunteer as this is a great opportunity to gain experience for a resume. The competition will be streamed live on the internet, and personal interviews will be conducted. Come see the competition for yourself or volunteer your efforts to gain valuable experience. For event information, visit <https://www.robotevents.com/robot-competitions/vex-robotics-competition/RE-VRC-18-7111.html>.

## Alumni & Community

### Women in Engineering

Dr. Margaret Nozario from NASA Glenn Research Center delivered an informative and inspirational presentation entitled “Women in Engineering: You Can Do it!” at the joint event on Oct. 26. The room was fully packed, and the student audience was really motivated and inspired by the presentation. The College received a lot of positive feedback from not only female students, but male students as well.

The event wouldn't be possible without the great help of HKN and SWE officers. They are Anusree Mandali (HKN president), Kelsey Letizio (HKN vice president), Mark Travis (HKN treasurer), Shubo Zhang (HKN Secretary) and Dorothy Zhao (SWE vice president). In particular, Travis and Zhao successfully secured a grant of \$1,000 to sponsor the event. Please note that the HKN has organized 19 joint seminars in the past nine years. For more information on HKN and SWE, visit <https://www.csuohio.edu/engineering/student-resources/student-organizations>.



Dr. Carl Panasik, a 1974 graduate, and Mr. John Robertson, a 1982 graduate, provided us with gracious donations for the department. **WE THANK YOU!**

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