

# School of Electrical Engineering and Computer Science

# NEWS



## Three EECS faculty earn NSF CAREER Awards

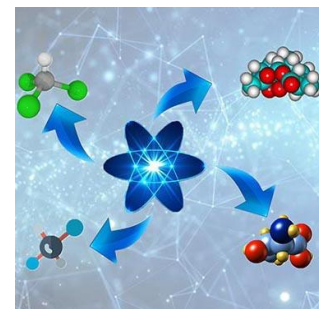
The Penn State School of Electrical Engineering and Computer Science (EECS) 2020 recipients of Faculty Early Career Development Program (CAREER) Awards from the National Science Foundation (NSF) are Shengxi Huang, assistant professor of electrical engineering and biomedical engineering; Mehdi Kiani, the Dorothy Quiggle Career Development Assistant Professor of Electrical Engineering; and Danfeng Zhang, assistant professor of computer science and engineering. >>

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## FEATURES

### Researchers explore quantum computing to discover possible COVID-19 treatments

Quantum machine learning, an emerging field that combines machine learning and quantum physics, is the focus of research to discover possible treatments for COVID-19, according to Penn State researchers led by Swaroop Ghosh, the Joseph R. and Janice M. Monkowski Career Development Assistant Professor of Electrical Engineering and Computer Science and Engineering. The researchers believe that this method could be faster and more economical than the current methods used for drug discovery. >>



## Penn State engineer developing device that may be able to test for COVID-19

A point-of-care testing device to help diagnose the novel coronavirus disease (COVID-19) is under development by Weihua Guan, assistant professor of electrical engineering in Penn State's College of Engineering. Guan is working to create a nucleic acid testing (NAT) method for COVID-19, which potentially could identify early asymptomatic cases by detecting genetic material instead of antigens or antibodies as traditional tests do. >>



## Engineers develop method to improve efficiency and heat tolerance of devices

When it comes to increasing electric storage efficiency and electric breakdown strength - the ability of an electrical system to operate at higher voltage and temperatures with great efficiency - increasing one traditionally has led to a decrease in the other. Penn State researchers, led by Qiming Zhang, distinguished professor of electrical engineering, recently developed a scalable method that relies on engineered materials to increase both properties. >>



## Penn State engineer receives DARPA grant to strengthen cybersecurity

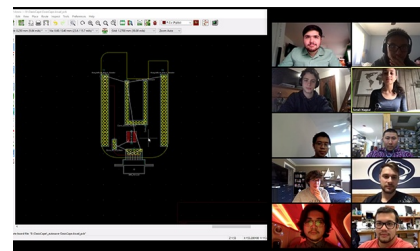
A parser, the element in a computer system that converts data inputs into an understandable format, is the first line of defense for cybersecurity. A multi-institute group of researchers that includes Gang Tan, James F. Will Career Development Associate Professor of Electrical Engineering and Computer Science in the School of Electrical Engineering and Computer Science and a co-hire at the Institute for Computational and Data Sciences (ICDS), has received an \$8 million grant that allots \$1 million for Penn State's part of the research to increase computer security by developing more secure parsers. >>



## NASA selects Penn State student team to build technology for lunar missions

Penn State students from the Student Space Programs Laboratory (SSPL) comprise one of eight university teams recently selected by the National Aeronautics and Space Administration (NASA) to develop new technology to study the surface of the moon.

"It is certainly very exciting to be a part of this project, especially being one of the few to see it grow from a concept on paper to getting funding from NASA to building the actual system," said Normen Yu, a first-year student who plans to major in computer science and the command and data handling lead for the project. >>



## Schreyer Honors Scholar applies neural networks to better predict severe storms

Kyle Bradley's introduction to research at Penn State came during the summer after his sophomore year, when he took a job at the

University's Applied Research Laboratory. His first project used sensor data to better determine when unplanned maintenance events on Navy ships might occur, potentially saving time and money, or even improving travel routes.

Today, the Schreyer Honors Scholar is working on a research project that could similarly predict trouble and allow people to better plan for it. As part of his honors thesis, Bradley is using machine learning to predict the projected paths and arrival times of serious thunderstorms and tornadoes. >>



## Electrical engineering assistant professor named 2020 Scialog Fellow

Aida Ebrahimi, assistant professor of electrical engineering at Penn State, has been named a 2020 Scialog Fellow. As a fellow, she will participate in the 2020 Scialog: Microbiome, Neurobiology and Disease Initiative, which is sponsored by the Research Corporation for Science Advancement, the Paul G. Allen Frontiers Group, and the Frederick Gardner Cottrell Foundation. >>



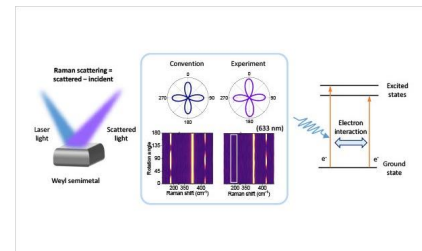
## Disrupting the sleep market was all in a day's work for alumnus JT Marino

Every parent knows college students like to sleep. Penn State computer science alumnus John-Thomas "JT" Marino, however, committed all his energy to sleep after graduating in 2012 when he started Tuft & Needle - a direct-to-consumer online mattress retailer with a "bed in a box" concept - completely disrupting the way consumers purchase their beds. >>



## New class of materials shows strange electron properties

A method to observe a new class of topological materials, called Weyl semimetals, was developed by researchers at Penn State, MIT, Tohoku University, Japan, and the Indonesian Institute of Sciences. The material's unusual electronic properties could be useful in future electronics and in quantum physics. >>



## What happened in Iowa? A conversation with a cybersecurity expert

Because of Patrick McDaniel's nationally recognized expertise in the area of cybersecurity, Sarah Small, communications strategist from the College of Engineering, sat down with him on Wednesday, Feb. 5, to better understand some of the technical flaws with the reporting app that delayed results for the Iowa caucus. McDaniel is the William L. Weiss Chair in Information and Communications Technology in the Department of Computer Science and Engineering at Penn State. >>

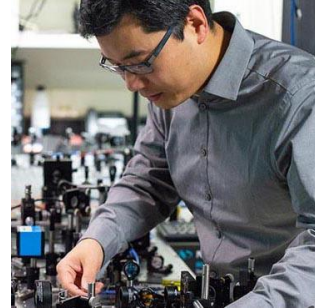


## New method breaks the reciprocity of light



## propagation

A novel method to prevent light from reflecting back in optical devices could allow advancements in several scientific fields, including optical communications, laser systems, and electronics, according to a team of Penn State electrical engineers. Led by Xingjie Ni, assistant professor of electrical engineering, the researchers published their work in a recent issue of *Light: Science & Applications*. [>>](#)



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## Blocking blackouts: Q&A with engineer Ray Chaudhuri on protecting the power grid

Power outages are frustrating for everyone involved, and large-scale outages-blackouts-can cripple a city, a region, or even an entire country for days. Electrical engineer Nilanjan Ray Chaudhuri, an expert on power grids, heads a Penn State team that won a \$999,000 grant from the National Science Foundation to explore ways to prevent and deal with the "cascading failures" that lead to massive blackouts. The project combines Chaudhuri's knowledge of power systems with the communications and networking expertise of colleagues Tom LaPorta and Ting He. Chaudhuri recently described some of the challenges involved, and how he and his colleagues plan to address them. [>>](#)



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## RECOGNITIONS & AWARDS

- Bradley named computational data sciences student marshal [>>](#)
- Petrone named computer engineering student marshal [>>](#)
- Tice named computer science student marshal [>>](#)
- Venkatesulu named electrical engineering student marshal [>>](#)
- Electrical engineering assistant professor selected as SPARC fellow [>>](#)
- New scholarship to support students studying engineering and education [>>](#)
- Penn State tops NSF rankings for breadth of research expertise [>>](#)
- College of Engineering awards five Multidisciplinary Research Seed Grants [>>](#)
- Penn State receives five-year \$3.7 million grant to study virus evolution [>>](#)
- Award fund established to honor late electrical engineering alumnus, professor [>>](#)
- Seven engineering faculty members receive ROCKET Seed Grant to fund new research [>>](#)

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