

CYPHER

Cyber-Physical Intelligence and Security



NEWSLETTER

· SPRING 2022 ·



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 <https://web.uri.edu/cypher/>

HELLO
Spring



THE
UNIVERSITY
OF RHODE ISLAND
COLLEGE OF
ENGINEERING

CYPHER CENTER FACULTY & STUDENT MEETING

On December 14th, 2021 the CYPHER Center held a end-of-year celebration involving undergraduate and graduate students, faculty and staff members, as well as interim dean Peter Swaszek and the VP of research Peter Snyder. Dr. Yan Sun started off the meeting by discussing the center's mission, research activities, awards, and recognitions.

Research Activities – Year 1

Five active research grants under CYPHER center. The total amount is **\$4,647,559.00**

10 faculty members

41 graduate students

12 are directly supported by grants under CYPHER
41% female

17 undergraduate students

SGRA – Michaela Bergwall

Addressing security challenges and AI advancement in power grid, computer networks, robotics, integrated circuits, high-performance computers and data centers.

1 book chapter

19 refereed journal articles

27 refereed conference articles

7 manuscripts under review

CYPHER members published

THINK BIG WE DO™

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CYPHER
Center for Cyber-Physical Security

Students and faculty were split into two teams to play a trivia game which contained questions focused on URI history, Rhode Island history, and recent technology event related to cyber-psychical security and artificial intelligence. There were also "difficult" questions relating to the Fascitelli Center for Advanced Engineering such as "how many stairs are in the spiral staircase?" and some easier questions such as "what caused the Brightspace and Interfolio outage in Dec. 2021?"

Faculty and students were able to connect and share research topics in-person while also meeting new students both undergraduate and graduate. Lunches were provided and the students were given final exam survival goodie boxes provided by the CYPHER Center.



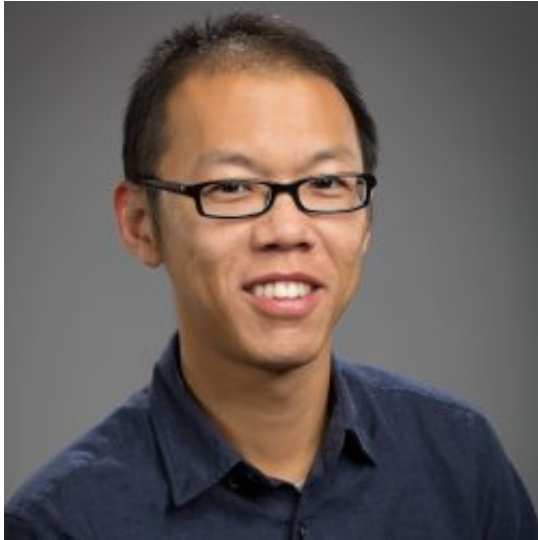
FEATURED AWARD

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DR. HUI LIN

RECEIVED NSF CAREER AWARD



Dr. Hui Lin received NSF CAREER awards "PARP: Mislead Physical-Disruption Attacks by Preemptive Anti-Reconnaissance for Power Grids Cyber-Physical Infrastructures," which will start from September 2022.

Cyberattacks targeting industrial control systems (ICSs) like power grids are unique. Adversaries can perform in-depth reconnaissance, which allows them to launch attacks to cause irreversible damage. This unique feature makes traditional passive intrusion detection and prevention relying on system anomalies very challenging to prevent damage.

During a recent interview Dr. Lin stated, "Our design is based on a competently different philosophy. Like setting a trap, we will provide some misleading information to disrupt adversaries' reconnaissance such that their activities introduce no damage but only reveal their existence, which can completely remove the potential damage in an actual system."



The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. Activities pursued by early-career faculty should build a firm foundation for a lifetime of leadership in integrating education and research.



APEC 2022 STUDENT ATTENDANCE SUPPORT



Xueshen Zhang, student of Dr. Jeong, received the APEC 2022 Student Attendance Support (Travel Support Award). Xueshen will attend the APEC (Applied Power Electronics Conference) this March in Houston, Texas. This conference is the biggest of its kind in the Power Electronics field.

Xueshen's research is to design a DC/DC converter utilizing the fuel cell and the battery as the power sources to output 16.8 V/400 W to drive the DC motors on the drones. The main benefit is long flight time while keeping the drones in small size and lightweight. This project could be especially useful for industrial and military applications.

ENHANCEMENT OF GRADUATE RESEARCH AWARD

The Provost, the Vice President of Research and Economic Development, and the Dean of the Graduate School are providing small grant awards to support research, creative or artistic projects. This program underscores the value placed on providing students with research opportunities and support for the scholarly work of graduate students.

Graduate students Gabriel De Pace, Hepeng Li, and Zhenhua Wang submitted their proposal "A Microgrid Testbed" which was selected as one of the awardees. A microgrid is an electricity producing source close to electrical loads. The ability to connect several microgrids together would create a decentralized, resilient power grid, reducing the impact of fierce storms and high winds. They plan on spending the award on equipment that will remain in the lab to better their research in the future.