COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

FACULTY RESEARCH TALKS

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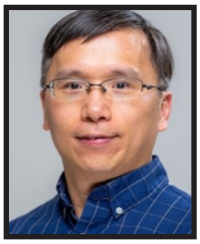
Zoom talk | Friday, Oct. 6, 2023 | Noon to 1 p.m.



PRESENTER 1:
LIPING YU
Associate Professor
Materials Science and Engineering

Materials Theory, Informatics and Design

Materials are at the core of most modern technologies. In this talk, Dr. Yu will provide a brief overview of several ongoing research projects in his group, focusing on the design of new materials for energy and electronic applications. These projects employ DFT-based first-principles methods in combination with data-driven machine learning techniques. Additionally, Dr. Yu will briefly discuss his future research interests, which include wide-gap semiconductors, emergent 2D materials and high-entropy materials.

Before joining UCF this fall, Dr. Yu was an assistant professor of physics at the University of Maine. He earned his Ph.D. in physics from N.C. State University. He completed his postdoctoral training at the National Renewable Energy Laboratory, working as a research professor for two highly interdisciplinary DOE Energy Frontier Research Centers at the University of Colorado Boulder and Temple University, respectively. Dr. Yu is a computational materials physicist by training and a recipient of the NSF CAREER award.

PRESENTER 2:
DI WU
Assistant Professor
Electrical and Computer Engineering

Enabling Emerging Applications via Novel Computing Paradigms

Due to the diverse, yet divergent requirements in emerging applications, modern computer architectures and systems are not able to serve all drastically different purposes all at once. Among those requirements, power efficiency is pivotal for futuristic systems like brain-computer interfaces, edge deep learning and superconducting-based quantum computing. In this talk, Dr. Wu will introduce his research on novel computing paradigms that yield unprecedented levels of power efficiency for future applications.

Dr. Wu received his Ph.D. from the University of Wisconsin-Madison, and his B.S. and M.S. degrees from Fudan University. His research interests broadly cover emerging areas of computer architecture and systems. He was a Machine Learning and Systems Rising Star 2023 and a recipient of the Wisconsin Distinguished Graduate Fellowship in 2022. His research was selected as a Qualcomm Innovation Fellowship Finalist in 2019 and awarded an IEEE Micro Top Pick in 2021.

PRESENTER 3:
MIKE BOROWCZAK
Associate Professor
Electrical and Computer Engineering

Expanding Models to Extract and Protect Assets

To support the strategic mission of both national and industrial interests, greater emphasis must be placed on the purposeful development and protection of assets such as intellectual property. This talk summarizes a decade of research in the development of high-level methods and automation for hardware attacks and protection. Side-channels, or information-laden operational by-products of systems, are highlighted as mechanisms to reduce the search space of complex systems or problems. The brief survey ends with a discussion of sustained educational research and products related to engaging and developing novice and expert populations in fundamental and advanced computational domains.

Dr. Borowczak's research is focused on automation for attacks, defense and design of resilient hardware devices, as well as developing and sustaining strategic educational pipelines. A two-time graduate of the University of Cincinnati, he earned his bachelor's degree in computer engineering in 2007, and doctoral degrees in computer science and computer engineering in 2013. Dr. Borowczak is a former hardware security architect and data scientist, having worked in the semiconductor industry for Intel and Texas Instruments, in bioinformatics for Cincinnati Children's Hospital Medical Center, and several startups including SolidFire, now a part of NetApp, and Automox. He and his students have published more than 75 peer-reviewed papers, and his research has been funded for about $8.5M since 2018 by federal, national, state, and industrial entities, including the NSF, NSA, Idaho National Laboratories, the State of Wyoming, IOG, Kraken and Ripple.

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