College of Engineering and Computer Science
FACULTY RESEARCH TALKS
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Zoom talk | Friday, July 17, 2020 | Noon to 1 p.m.

Industry Partner Spotlight: L3Harris

Ross Niebergall, Ph.D., vice president of engineering and chief technology officer of L3Harris, will provide a high-level overview of the newly formed L3Harris created by the merger of Harris Corporation and L3 Technologies. Ross will share how L3Harris is organized and where the company focuses its research and development resources. He will also highlight past research and recruiting successes with UCF, as well as discuss how UCF might partner with L3Harris going forward.

Dr. Niebergall joined Harris Corporation in 2017 as vice president and chief technology officer prior to the company's merger with L3 Technologies, Inc. He previously served as vice president, deputy for development programs, engineering and technology, for Raytheon's Intelligence, Information and Services unit. Dr. Niebergall has a bachelor's degree from the University of Regina in Canada and master's and doctoral degrees in mathematics from the University of Notre Dame. He is a member of the UCF College of Engineering and Computer Science Dean's Advisory Board and previously served on the Engineering and Computer Science Leadership Council at California State University.

PRESENTER 1:
ROSS NIEBERGALL
VP of Engineering and CTO of L3Harris
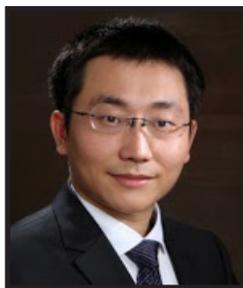
When Machine Learning Meets Scheduling Theory: Towards Real-Time Intelligent Cyber-Physical Systems

In the era of cyber-physical systems (CPS), sensing, communication, and computing are becoming more affordable and integrated. Many CPS have strict logical and temporal constraints and often are of massive scale. This talk discusses recent and ongoing efforts to incorporate reliable, interpretable and transferable machine learning and real-time scheduling techniques for CPS modeling, design and analysis. With various engineering applications, those solutions shed light on handling challenges in energy efficiency, security isolation, system coordination, reliable prediction and control, etc. of modern CPS.

Dr. Guo has 15 years of research experience in artificial intelligence, and eight years of research experience in real-time and embedded systems. He joined UCF in the summer of 2018. Since then, his group has published 12 papers in top-tier venues such as CSRanking, including the best student paper award in RTSS'19, which helped UCF rank No. 15 nationally in the real-time and embedded systems domain. Dr. Guo and his collaborators have secured $2.2 million in NSF research funding over the past two years. He is a senior member of IEEE and a member of ACM.

PRESENTER 2:
ZHISHAN GUO
Asst. Professor, Electrical and Computer Engineering

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PRESENTER 3:
MOHAMED ZAKI
Asst. Professor, Civil, Environmental and Construction Engineering

Computer-Aided Methods for Smart Cities: From Safe Designs to Safe Mobility

Next-generation transportation will be integrated, interconnected and highly autonomous. One key challenge in traffic management is ensuring safety while maintaining the required level of service quality. In this talk, Dr. Zaki will present themes of his research related to proactive safety, road-user behavior and formal verification. He will also discuss the potential of several technologies in addressing challenges in transportation and their applications in real-world case studies.

Dr. Zaki's main research are sustainable transportation, cyber-physical systems, formal verification and road safety. His long-term goal is to understand the rules that govern the travel behavior of active modes to improve sustainability in the era of smart mobility. Before joining UCF in 2018, he was affiliated with the University of British Columbia as a postdoctoral fellow and then as a research associate. Dr. Zaki received his doctoral degree from Concordia University, Montreal, in 2008. He serves on the TRB Committee on Artificial Intelligence and Advanced Computing Applications and the ASCE Transportation Safety Committee.

PRESENTER 4:
KEVIN R. COFFEY
Professor, Materials Science and Engineering

Nanoscale Metallic Interconnects

The power and speed limits of today's complementary metal oxide semiconductors (CMOS) are not semiconductor issues. The problem with CMOS lies in the metal interconnecting wires, exacerbated by the increasing resistivity as the Cu wires are made smaller. This presentation will focus on the advantages expected for single crystal metal interconnects at future, sub-10nm, linewidths. The role of grain boundary and surface scattering in the resistivity increase will be discussed, as well as the role of the electronic structure of the metal.

Dr. Coffey started industrial research in electrophotography in 1979. He transitioned to magnetic recording and received his M.S. in physics from Northeastern University in 1985 and a Ph.D. in materials science and engineering from Massachusetts Institute of Technology in 1989 with a study of superconducting materials. He returned to industry, primarily with IBM in magnetic recording, before joining UCF in 2002. Dr. Coffey's research interests have focused on thin-film electronic materials, primarily metals. While focused on hard and soft magnetic thin films in industry, his current interest in nanowire resistivity grew from work in spin-dependent scattering at interfaces in magnetic materials (spintronics).

ZOOM LINK: https://bit.ly/35unuVe | **QUESTIONS?** Email Jennifer.Sutton@ucf.edu
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