COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

FACULTY RESEARCH TALKS

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Zoom talk | Friday, Sept. 16, 2022 | Noon to 1 p.m.

PRESENTER 1:
YUNJUN XU
Professor,
Mechanical and
Aerospace Engineering

Agricultural Robotics Research in the UCF ArcLab

In recent years, operation automation utilizing robotic technologies has become a new trend in the agricultural industry, particularly in precision agriculture, to tackle the challenges of labor shortage and cost increases while supporting the needs of a growing population and the quality of living. As this is his second talk on this research, he will share recent progress in fields of robot motion control, decentralized scheduling of cooperative robots, and some field experiments.

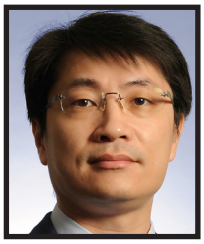
Dr. Xu's research is in the general area of guidance, navigation and control and robotics. He earned his Ph.D. from the University of Florida. His group has been developing robotic technologies benefiting agricultural productions. Dr. Xu's research is supported by NSF, USDA and others, including National Robotic Initiative Grants.

PRESENTER 2:
KRISTOPHER O. DAVIS
Associate Professor,
Materials Science and
Engineering, RISES
Cluster, Florida Solar
Energy Center, CREOL

Interdisciplinary and Multi-Faceted Research Aimed at Accelerating the Adoption of Solar Energy Technologies

Dr. Davis will discuss interdisciplinary and multi-faceted research efforts at UCF aimed at accelerating the adoption of solar energy technologies. This research includes the development of functional thin films and nanostructured materials that enhance optical absorption and limit the loss of charge carriers within photovoltaic devices. This work also includes the development of spatially-resolved characterization techniques that automate the detection and classification of defects in photovoltaic modules formed during manufacturing or during field operation, enabling researchers to rapidly diagnose problems and more effectively develop solutions. Finally, Dr. Davis will share recent progress on building a large, highly interdisciplinary team at UCF aimed at maximizing the benefits of photovoltaic systems to underserved communities.

Dr. Davis has served as PI and Co-PI on projects funded by industry, the state of Florida and the U.S. Department of Energy. He has published more than 50 peer-reviewed journal articles in the field of photovoltaics and serves on the IEEE Photovoltaic Devices Committee.



PRESENTER 3:
KENLE CHEN
Assistant Professor,
Electrical and Computer
Engineering

Next-Generation Radio Frontend Systems Towards Energy- and Spectrum-Efficient Communications

In this talk, Dr. Chen will first introduce his NSF-funded research on novel radio frontend architectures offering unlimited bandwidth, high efficiency and intrinsic linearity that radically outperform the state-of-the-art. Moreover, advanced and intelligent reconfigurability is incorporated into these RF frontends for achieving strong resilience to antenna impedance fluctuations, which is crucial to fully unleash the spectral effectiveness of the prevailing massive MIMO system. In further cooperation with cross-layer and cross-disciplinary designs, the advances will pave the path to future-generation energy- and spectrum-efficient wireless communications.

Dr. Chen's research is mainly focused on extreme-performance RF/mm-Wave circuits and systems for 5G/6G communications, revolutionary reconfigurable RF/mm-Wave electronics, and novel RF technologies for interdisciplinary applications. He earned his Ph.D. in electrical engineering from Purdue University in 2013. Prior to his career in academia, he worked as principle/lead RFIC engineer with both innovative startups and leading enterprises in the semiconductor industry, such as Skyworks Solutions Inc. His group has won multiple prestigious research-based awards, including a first place best paper award at the flagship conference of IEEE Microwave Theory and Techniques Society (MTT-S) and four first-place awards in MTT-S design competitions.

ZOOM LINK: https://bit.ly/3ILqC1l | PREVIOUS TALKS: www.cecs.ucf.edu/faculty-research-talks