UNIVERSITY OF CENTRAL FLORIDA | ORLANDO

UCF

College of Engineering and Computer Science

FACULTY RESEARCH TALKS

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Zoom talk | Friday, Jan. 22, 2021 | Noon to 1 p.m.

PRESENTER 1:

PETER DELFYETT

Pegasus Professor, CREOL, The College of Optics and Photonics, Electrical and Computer Engineering, Physics

Ultra-Wideband, Ultrafast Optical Communications and Signal Processing

Since the 2005 Nobel Prize was awarded, optical frequency combs (OFC) have become ubiquitous as novel optical sources for a plethora of applications. This presentation will illustrate the use of OFCs as a coherent set of phase-locked oscillators for applications in optical communications, signal processing and metrology. Dr. Delfyett will demonstrate real-time complex arbitrary optical or RF signal generation and measurement, and show their use in matched filtering, OCDMA and chip scale Tb/s data links.

Dr. Delfyett joined UCF in 1993. His research focuses on photonic-assisted applications in ultra-wideband optical signal processing and communications. In 2003, he founded Raydiance Inc., a spin-off company developing high-power, ultrafast laser systems for applications in medicine, consumer electronics and automotive markets. Dr. Delfyett is a fellow of the APS, IEEE, NAI, OSA, and SPIE, and a recipient of the NSF PECASE Award, the APS Edward Bouchet Award, the IEEE Photonics Society's William Streifer Scientific Achievement Award and the APS Arthur Schawlow Prize in Laser Science. He has more than 800 scientific publications, conference proceedings and presentations, and 44 U.S. patents.

PRESENTER 2:

GITA SUKTHANKAR

Associate Professor, Computer Science

Data-Driven Social Information

Data-driven social informatics unites models derived from social science with data-driven approaches in order to model and predict population behavior patterns. It can be used to advance our understanding of human behavior, guide public policy decisions, and improve user experience with social media platforms. Dr. Sukthankar will describe how her team used agent-based modeling and machine learning to model human social systems for two DARPA challenges, SocialSim and ASIST (AI for Successful Teams).

Dr. Sukthankar's current research centers on multi-agent systems, computational social science and machine learning. She is a recipient of AFOSR Young Investigator, DARPA Computer Science Study Group and NSF CAREER awards. Dr. Sukthankar was elected to the board of the International Foundation for Autonomous Agents and Multi-agent Systems and DARPA's Information Science and Technology advisory group. She served as program and general chair for the top-ranked International Conference on Autonomous Agents and Multi-Agent Systems. She received her Ph.D. from the Robotics Institute at Carnegie Mellon and an A.B. in psychology from Princeton University.

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

For more information, and to see previous talks, visit www.cecs.ucf.edu/faculty-research-talks

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PRESENTER 3:
ENRIQUE DEL BARCO
Professor,
Department of Physics,
Associate Dean,
College of Sciences

Low-Dimensional Magnetism, Transport and Spintronics

Tremendous advances have been achieved in the fields of molecular magnetism, molecular transport, and low-dimensional and ultrafast spintronics. Dr. del Barco will showcase the work his group is performing along these three directions, placing particular emphasis on the prospects arising from the use of antiferromagnetic systems in spintronics devices that may lead to computation/memory solutions up to three orders of magnitude faster (THz) than current technologies (GHz).

Dr. del Barco received his Ph.D. from the University of Barcelona in 2001 and completed a postdoctoral stay in the physics department at New York University before joining UCF in 2005. His research interests include the study of how the microscopic laws of physics — quantum mechanics — manifest themselves at a macroscopic scale. Quantum control of the magnetization and/or charge state in molecules and nanostructures will greatly impact molecular spintronics and quantum information and computation technologies. In particular, Dr. del Barco studies the quantum dynamics of spin in single-molecule magnets: electronic transport in single-molecule tunnel junctions and terahertz spin dynamics in antiferromagnetic spintronics devices. He has been recognized as fellow of the American Physical Society.

PRESENTER 4:
NAIM KAPUCU
Pegasus Professor,
School of Public Administration, RISES Cluster

Network Governance for Resilience of Interdependent Systems

Dr. Kapucu's research focuses on network governance and decision-making in complex environments, seeking to understand how interorganizational networks influence public service delivery and address complex policy problems. He uses network science as a framework and an analytic tool in managing natural and man-made disasters/crises, planning for emergencies and multi-sector collaboration for building resilience. Network science constitutes a field of substantial interest and importance to democratic societies that are seeking to solve public problems with innovative means at reasonable cost.

Dr. Kapucu's research interests are network governance, emergency and crisis management, decision-making in complex environments and leadership. He has brought in more than $10 million in grant funding to support his research and community engagement activities, published 10 books and authored/coauthored more than 130 peer-reviewed journal articles. His work has been published in *Public Administration Review*, *Journal of Public Administration Research and Theory*, *American Review of Public Administration*, and *Disasters*, among others. He teaches network governance, leadership, and method courses.

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