



UCF

FACULTY RESEARCH TALKS

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Zoom talk | Friday, Sept. 8, 2023 | Noon to 1 p.m.



PRESENTER 1:
HANSEN A. MANSY

Professor
Mechanical
and Aerospace
Engineering

Smart Stethoscopes: Non-Invasive Technologies for Medical Diagnosis and Patient Monitoring

Stethoscopes have been used for medical diagnoses of a wide range of conditions for more than a century. However, their traditional use is skill-dependent and only provides qualitative information at one simultaneous surface location. There is unique diagnostically important information in the audible and sub-audible frequency of body sounds since characteristic times for many physiological processes are in that range. This talk will present examples of pathologies that can be diagnosed via their vibro-acoustic signatures, offering several advantages including high safety, prompt results, low cost, portability, noninvasiveness and compatibility with telehealth.

Dr. Mansy received his Ph.D. in mechanical and aerospace engineering from India Institute of Technology in 1990 with a focus on flow-induced vibrations. After postdoctoral training and working in the medical device industry, he joined the faculty of Rush University Medical Center, then moved to UCF in 2013. His research focuses on investigating vibro-acoustic phenomena and developing related medical diagnostic tools. He has received significant federal and foundation research funding, actively publishes in his area and serves as a grant reviewer for many national and international organizations including the NIH, NSF, DoD and AFOSR.



PRESENTER 2:
GITA SUKTHANKAR

Professor
Computer Science

Towards Human-Machine Teaming

Human-machine teaming is a collaborative relationship between humans and agents that allows them to work together to achieve a common goal. It is particularly important due to the emergence of increasing autonomous agents. In this talk, Dr. Sukthankar will describe work done at the Intelligent Agents Lab, where her team uses a combination of natural language processing and machine-learning to model human teams for the DARPA challenge, AI for Successful Teams, or ASIST.

Dr. Sukthankar received her Ph.D. from the Robotics Institute at Carnegie Mellon and an A.B. in psychology from Princeton University. She is a recipient of the AFOSR Young Investigator, DARPA CSSG and NSF CAREER awards, as well as UCF awards for research excellence. Her current research centers on multi-agent systems and human-robot interaction. Dr. Sukthankar has chaired several AI conferences and served on the boards of the International Foundation for Autonomous Agents and Multi-agent Systems and DARPA's Information Science and Technology advisory group. She has recently edited a book, *Computational Theory of Mind for Human-Machine Teams*.



PRESENTER 3:
LELAND NORDIN

Assistant Professor
Materials Science
and Engineering;
CREOL

Epitaxial Nanophotonics: A Path to Quantum-Limit Devices

Semiconductor materials and optoelectronic devices are vital for next-generation technology — quantum computing, AI/ML, sustainable energy and advanced medical applications. Cooling demands, though, hamper their potential. Dr. Nordin's research tackles this challenge head-on by harnessing novel nanophotonic modes, quantum-engineered active regions, ultra-high vacuum crystal growth and advanced fabrication techniques. This integration leads to a substantial enhancement in device functionality and performance.

Dr. Nordin's research is at the forefront of next-generation semiconductor materials and devices, spanning design, growth, fabrication and characterization. Prior to UCF, he served as a postdoctoral research fellow at Stanford University's Geballe Lab for Advanced Materials. His work revolved around synthesizing dissimilar III-V and IV-VI semiconductor heterostructures for mid-infrared optoelectronic devices. He holds a B.A. in physics from Grinnell College, and an MSE and Ph.D. in electrical and computer engineering from The University of Texas at Austin. During his graduate studies, he specialized in III-V ultra-thin plasmonic infrared detectors and emitters.