



UCF

FACULTY RESEARCH TALKS

LISTEN. LEARN. COLLABORATE.

Zoom talk | Friday, Oct. 20, 2023 | Noon to 1 p.m.



PRESENTER 1:
QUISHI FU
Assistant Professor
Mechanical
and Aerospace
Engineering, Bionix
Cluster

Neuromotor Control of Human Dexterous Movements

The human hand is a unique sensorimotor system with unparalleled versatility. In this talk, Dr. Fu will discuss two ongoing research projects that investigate the neural mechanisms' underlying manual dexterity and how this knowledge can help restore and enhance hand functions. The first project uses electroencephalograms to decode motor intent of the upper extremities from cortical activities. The second project examines visuomotor control of bimanual coordination.

Dr. Fu's laboratory focuses on the neural control of human upper extremities using interdisciplinary approaches such as robotics, virtual reality and neural imaging. His research on human manual dexterity has broad applications in brain-machine interfaces, neurorehabilitation and assistive devices. He has also recently developed two graduate courses for the biomedical engineering programs at UCF. Before joining UCF, he was a research professor at Arizona State University. He received his Ph.D. from Arizona State University, M.S. from University at Buffalo, and B.S. from Tsinghua University. His research has been supported by NIH and DARPA.



PRESENTER 2:
**SVETLANA
SHTROM**
Director
Office of Technology
Transfer, Office of
Research

NSF Accelerating Research Translation (ART) Program

UCF was recently awarded a \$6M cooperative agreement under the NSF Accelerating Research Translation program. The program will enhance the university's research translation capacity in various ways, including strengthening and sustaining institutional infrastructure dedicated to bringing promising research results to the marketplace, expanding the educational and training opportunities with evidence-based entrepreneurship and expanding the pathways graduate students can take after graduation to include startup company development and industrial research and development. It will also support six seed translational research projects aimed at creating economic and societal impact through the formation of technology startup companies.

Dr. Shtrom has extensive experience in business development and technology management. She has broad expertise in collaborative partnership structuring, strategic planning, market assessment, technology evaluation and intellectual property management. Her business development experience includes leadership roles in academia, government and industry. Dr. Shtrom holds an MBA from UCF. She was a postdoctoral fellow at the National Institutes of Health and received a Ph.D. in cell biology from the University of California at San Francisco and a B.S. in molecular genetics from Ohio State University, where she received the prestigious Goldwater Scholarship. Dr. Shtrom serves on the Board of Directors for BioFlorida.



PRESENTER 3:
**MOHSEN
RAKHSAN**
Assistant Professor
Electrical and
Computer
Engineering,
Disability, Aging
and Technology
Cluster

Sensory Restoration and Intuitive Control of Neural Prostheses

Recent developments in robotics have allowed for advanced dexterity in neural prostheses. Despite this, individuals with upper-limb amputation have not embraced the technology as much as anticipated. This is due to difficulties with controlling the prosthesis and a lack of sensory feedback. At the Laboratory for Interaction of Machine and Brain (LIMB), the team is dedicated to developing intuitive control algorithms and sensory feedback systems for prostheses. What sets them apart is their emphasis on studying the brain to inform their approach to improving prosthetic technology.

Prior to joining UCF, Dr. Rakhshan was the Biomedical Engineering Distinguished Fellow at The Johns Hopkins University School of Medicine, where his research focused on brain-machine interfaces and neural prostheses. He holds a Ph.D. in cognitive neuroscience from Dartmouth College, where he studied computational and mathematical models of decision-making and neural plasticity. During his Ph.D., he was appointed as an E.E. Just Fellow for his contributions to promoting diversity, equality and inclusion in graduate-level studies. He has received two M.S. degrees in electrical engineering at the University of Notre Dame and the Shiraz University of Technology, during which his research focus was on intelligent control systems and nonlinear dynamics. He also received a B.S. in electrical engineering from Shiraz University.