



UCF

FACULTY RESEARCH TALKS

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Zoom talk | Friday, March 28, 2025 | Noon to 1 p.m.



PRESENTER 1:

ROGER AZEVEDO

Professor
School of Modeling,
Simulation and
Training

Augmenting Human Learning and Performance: Adaptive AI, Multimodal Data and the Future of Intelligent Training Technologies

In this presentation, Roger Azevedo explores how multimodal human data — speech, eye tracking, facial expressions, physiological signals, and non-verbal and behavioral analytics — enhance personalization and adaptivity in AI-driven learning and training technologies. He will discuss how his team models and scaffolds metacognition and self-regulated learning in real-time within game-based environments, simulations and human digital twins. His framework is designed to adaptively augment human performance, learning, problem-solving and reasoning across tasks, domains and contexts.

Azevedo is an affiliated faculty member in the Department of Computer Science and Department of Internal Medicine. He is the lead scientist for the Learning Sciences Faculty Cluster Initiative, researching cognitive, metacognitive, affective, motivational and social regulatory processes in learning with advanced technologies. With over 300 peer-reviewed publications, he has significantly advanced understanding of these processes across AI systems in K12, healthcare and workforce development. He is a Fellow of American Psychological Association and American Educational Research Association, and a recipient of the NSF CAREER Award.



PRESENTER 2:

MELANIE COATHUP

Professor
College of Medicine
Lead, Bionix Cluster

Preventing Radiation- and Unloading-Induced Injury: Novel Countermeasures to Protect Bone and the Bone Marrow Niche

Musculoskeletal atrophy has serious implications for astronaut health. Due to the extended time in near weightlessness during prolonged spaceflight beyond low-Earth orbit, together with the increased exposure to high energy radiation, novel strategies that are effective in preventing and treating bone atrophy are crucial for planned missions to the Moon and Mars. In this presentation, two novel osteoprotectors will be discussed. Ultimately, the goal is to develop a protective medical countermeasure that will safeguard crew members during exploration missions to the Moon and Mars, as well as support bone health on Earth.

Coathup was inducted as a Fellow of the American Institute of Medical and Biological Engineering in 2023. Her research is focused on orthopaedic innovation with the view of applying scientific discovery to improve the treatment and care of patients. Her research focuses on developing novel antibacterial products, as well as advancing novel biomaterials, and small molecule therapeutics that boost bone repair when under challenging and complex physiological conditions. This includes aging, infection, ionizing radiation-induced injury and bone health when in space.



PRESENTER 3:

SOHEIL SABRI

Assistant Professor
School of Modeling,
Simulation and
Training

Overcoming Urban Digital Twin Challenges: Enhancing Spatial Data Integration for Real-Time Analysis and Situational Awareness

In this presentation, Soheil Sabri will discuss three major challenges of digital twins: fragmentation, frequency and fidelity of spatial data for modeling, simulation and predictive analysis. He will demonstrate how real-time analysis of spatial and temporal urban physical entities and processes, such as utility networks, disease transmission and natural hazards, can be enhanced through multi-scale spatial graph data models. Additionally, he will discuss the value of location accuracy in inferring knowledge and insights by synchronizing Geopose standards with data streams from video recordings and mobile imagery to support personalized situational awareness and early warning systems.

Sabri directs the Urban Digital Twin Lab at the School of Modeling, Simulation and Training. His core interests focus on research and development in geospatial artificial intelligence, multi-dimensional planning support systems, and spatially explicit analytical models. He is an Honorary Senior Researcher at The University of Melbourne where he received two postdoctoral fellowships focused on geosimulation, urban analytics data infrastructure and 3D geospatial techniques for landscape design.