



UCF

FACULTY RESEARCH TALKS

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Zoom talk | Friday, Feb. 21, 2025 | Noon to 1 p.m.



PRESENTER 1:
VISHNU PRABHU
Assistant Professor
School of Modeling,
Simulation and
Training

eXtended Reality, Biosensing and Digital Twins in Healthcare

In this presentation, Vishnu Prabhu will discuss his research on digital twins and extended reality, with a focus on healthcare applications. He will present their study integrating real-time biosensor (EKG, fNIRS, etc.) data with virtual environments to mitigate pain and anxiety during surgery, biopsies and chemotherapy. Next, he will discuss their ongoing work on using digital twins and multi-agent reinforcement learning, or MARL, to model and mitigate infection spread in healthcare settings.

Prabhu is an assistant professor in the School of Modeling, Simulation and Training at UCF, where he leads the eXtend Reality, Biosensing and Simulation Lab (XR BioSim Lab). Prior to that, he was an assistant professor at the University of North Carolina at Charlotte. His primary research interest is data-driven decision-making in healthcare, health systems modeling and deploying Internet of Things, or IoT, solutions in healthcare to improve patient, clinician and system outcomes. Prabhu is also passionate about utilizing eXtended reality such as AR and VR, wearables, biosensors, digital health tools and non-pharmacological techniques to address pain, anxiety and training.

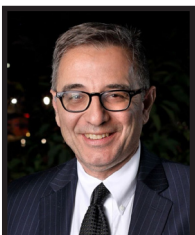


PRESENTER 2:
JUSTIN URSO '15
'22PhD
Research Assistant
Professor
Mechanical and
Aerospace Engineering

Development of K-16 Research Opportunities in Aerospace Engineering

In this presentation, Justin Urso will discuss ongoing efforts to bring aerospace opportunities and activities to K-12 and undergraduate student populations in Florida. The presentation focuses on the implementation of the NASA Aerospace Academy at UCF and in surrounding counties to provide experiential learning to the students and provide information on opportunities and pathways to success in college and beyond through workshops, guest speakers and lab tours. In addition to the K-12 program, programs with support from the Joint Hypersonics Transition Office and the U.S. Navy meant to train undergraduate students in research, particularly in hypersonics, will be discussed.

Urso completed his doctorate at UCF in 2022, receiving a P3 fellowship during his postdoctoral research. His research focuses on non-invasive optical diagnostics and chemical kinetics of hypersonic flows, combustion of alternative fuels and energetic materials, and other harsh environments for propulsion and energy production. He became a research assistant professor at UCF in 2024. He has published extensively in AIAA and ASME journals and conferences, with work sponsored by the DoE, DoD, NASA and NNSA. He is the program manager for the NASA Aerospace Academy and the director of the world-leading HiPER-STAR experimental facility.



PRESENTER 3:
MICHAEL
GEORGIPOULOS
Dean
College of Engineering
and Computer Science

NSF S-STEM Program: Flit-GAP

The S-STEM program enables low-income students with academic ability, talent or potential to pursue successful careers in promising STEM fields. This talk will cover an NSF S-STEM, Track 3 (Inter-Institutional Consortia) project: Flit-GAP, awarded to lead Florida International University and partner institutions, the University of Central Florida and University of South Florida. Flit-GAP was awarded a \$5M, five-year NSF grant in 2021 and it successfully went through third year review by NSF in Fall 2024. This talk will describe the Flit-GAP program, its objectives and accomplishments, and it will conclude with some lessons learned of how to manage cross-institutional educational efforts.

Georgiopoulos became the college's sixth dean in July 2013. He received his diploma in electrical engineering from National Technical University of Athens, and his master's and doctorate in electrical engineering from the University of Connecticut. His research expertise is in machine learning with special emphasis on neural network algorithms and related applications. Georgiopoulos has a strong affinity towards programs that enhance STEM student experiences and help them discover their professional pathway, including YES (NSF S-STEM grant), Flit-Path (NSF S-STEM grant) and EXCEL (initially an NSF STEP grant that is now institutionalized by UCF). EXCEL, for example, has improved STEM students' graduation rate by approximately 50%.