



UCF

UNIVERSITY OF CENTRAL FLORIDA | ORLANDO

College of Engineering and Computer Science

# FACULTY RESEARCH TALKS

LISTEN. LEARN. COLLABORATE.

Zoom talk | Friday, May 8, 2020 | Noon to 1 p.m.



PRESENTER 1:

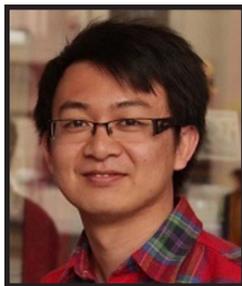
**AMRO AWAD**

Asst. Professor,  
Electrical and  
Computer Engineering

## Improving Security, Performance and Efficiency of Emerging Computer Architectures

Dr. Awad will discuss his group's efforts to improve security, performance and energy efficiency for emerging compute architectures. In particular, emerging memory technologies and architectures introduce new system assumptions, programming models, and behaviors that require rethinking security and safety. In this talk, he will discuss a DARPA project (MemSec), mainly focusing on redesigning secure architectures for emerging memory technologies. He will also discuss an ONR project to provide safety-aware processor architectures.

Awad's research focuses on secure hardware architectures, emerging memory technologies, and safety-critical systems. Before joining UCF, he was a senior staff member at Sandia National Labs in Albuquerque. He earned his Ph.D. degree in computer engineering from NC State in 2016 and had several research stints at AMD Research, Los Alamos National Lab, HP Labs and Air Force Research Lab (AFRL). He was also an Air Force Faculty Fellow in Rome, NY. He now leads the secure and advanced computer architecture (SACA) group at UCF and his group constantly publishes in the most prestigious computer architecture conferences.



PRESENTER 2:

**WEI ZHANG**

Computer Science &  
Genomics and  
Bioinformatics Cluster

## Large-Scale Machine Learning Algorithms for Biomedical Data Science

During the last decade, hundreds of machine learning methods have been developed for disease outcome prediction based on high-throughput genomics data. However, the quality of the input genomics features and the output clinical variables has been ignored in these algorithms. In this talk, Dr. Zhang will introduce two studies that develop methods to learn more accurate molecular signatures and drug response values for cancer research. These studies are supported by NSF and Moffitt Cancer Center.

Zhang's research interests include computational biology and machine learning. His research has centered on investigating the role of transcriptome variants in diseases, spanning from technique-driven research (e.g., algorithm development for disease outcome prediction), to hypothesis-driven investigation of specific biological problems. He received his PhD and MS from University of Minnesota in 2015 and 2011, both in computer science. Before joining UCF in 2017, he was a research associate at University of Minnesota. Dr. Zhang received NSF CRII award in 2018.

ZOOM LINK: <https://bit.ly/35unuVe> | QUESTIONS? Email [Jennifer.Sutton@ucf.edu](mailto:Jennifer.Sutton@ucf.edu)



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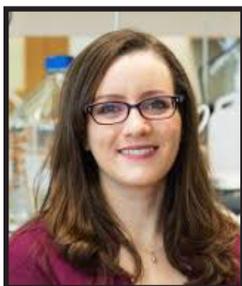
**SWAMINATHAN  
RAJARAMAN**

Asst. Professor,  
Materials Science and  
Engineering,  
Nanoscience  
Technology Center

## Makerspace Micro/NanoFabrication of Biomedical and Agricultural Microsystems

The rapidly emerging fields of “Organs-on-a-Chip” in biology and systemic pathogen treatment in plant science require the development of analytical micro/nanosystems tools to advance development. Additive Manufacturing (AM) is expected to revolutionize micro/nanosystems. In this talk, Dr. Rajaraman will showcase AM-enabled Micro/NanoFabrication technologies developed in his group for applications in these emerging fields in both biology and in plant sciences that are leading to novel discoveries and new paradigms.

Rajaraman’s current research interests include in-vitro and in-vivo Microelectrode Arrays (MEAs), micro/nanofabrication, micro/nanofabrication on novel, biological substrates, microneedles, agricultural microsystems, MicroTAS, nanosensors and implantable MEMS devices. He has been at UCF for 4 years and prior to that he was a co-founder and VP at Axion BioSystems, a leader in MEA technology. He has published 50 articles in peer-reviewed journals and conferences and holds 22 patents and applications. He teaches undergraduate courses in MSE and has developed graduate classes in MSE and Nanotechnology. He obtained his Ph.D. from Georgia Tech and M.S. from the University of Cincinnati, both in Micro/Nanosystems Engineering.



PRESENTER 4:

**ELIZABETH  
BRISBOIS**

Asst. Professor,  
Materials Science and  
Engineering, Bionix  
Cluster

## Developing Biocompatible Nitric Oxide Releasing Polymers for Medical Device Application

In this presentation, Brisbois will introduce her research related to developing the next generation of biocompatible polymers for medical device applications utilizing nitric oxide release chemistry. These materials can be used to fabricate “prototype” devices (e.g., insulin cannulas, extracorporeal life support circuits) and are characterized using both in vitro bioassays and animal models, with the goal of translation to improve patient care.

Brisbois’ area of focus is in translational research to design nitric oxide releasing polymers and evaluating their clinical applications using in vitro methods and in animal models. Her research has been funded by competitive grants from sponsors including NIH and JDRF. Prior to joining UCF, she completed her PhD in Chemistry at the University of Michigan and an NIH Individual Postdoctoral Fellowship at Michigan Medicine’s Department of Surgery. She has been awarded with honors including an NIH F32 Individual Postdoctoral Fellowship, a Michigan Institute for Clinical & Health Research career development award, Baxter Inc. Young Investigator Award, and University of Michigan Department of Chemistry Research Excellence Fellowship.

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