



UCF

FACULTY RESEARCH TALKS

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Zoom talk | Friday, Sept. 22, 2023 | Noon to 1 p.m.



PRESENTER 1:

SAMIUL HASAN

Associate Professor
Civil, Environmental
and Construction
Engineering

Data Science for Smart and Resilient Cities: Rethinking Resilience in the Era of Rapidly Intensifying Hurricanes

In this talk, Dr. Hasan will present his group's efforts to understand infrastructure and community resilience through developing data-driven approaches. He will present several NSF-funded and other projects focusing on hurricane evacuation, infrastructure disruptions and population mobility, with an emphasis on rapidly-intensifying hurricanes. He will also discuss his ongoing partnership with industry to build a digital twin for autonomous shuttle operations in Lake Nona, Florida.

Prior to joining UCF, Dr. Hasan was a postdoctoral fellow at the Commonwealth Scientific and Industrial Research Organization in Australia. He received a Ph.D. from Purdue University in 2013. He also received the 2014 Best Dissertation Award from the Institute for Operations Research and the Management Sciences. His research interests include urban data science, human mobility, network modeling, infrastructure interdependencies and disaster management. Dr. Hasan's research has received funding from Florida DOT, NSF, Northeast Florida Regional Planning Council, and SAFER-SIM UTC.



PRESENTER 2:

HWAN CHOI

Assistant Professor
Mechanical
and Aerospace
Engineering,
Bionix Cluster

Analysis of Pathologic Musculoskeletal Dynamics and Developing Smart Assistive Devices to Improve Dynamic Function for People With Disabilities

Ankle assistive devices such as orthoses and prostheses are available for individuals with neurological impairments and individuals with limb loss, respectively. They are designed to provide support and alignment for better walking function. There are many tuning parameters available for these assistive devices such as adjusting stiffness, energy release timing and joint power. Dr. Choi will present how musculoskeletal modeling can be useful for clinical treatments and developing assistive devices. He will also demonstrate novel assistive devices which can provide optimal support for people with walking disabilities.

Dr. Choi's research interests include computational musculoskeletal analyses, assistive device developments and machine learning. His research centers on developing subject-specific computational musculoskeletal modeling for lower limb amputation to identify the role of residual muscle, ubiquitous motion monitoring framework and ankle assistive devices. Dr. Choi received his Ph.D. from the University of Washington in mechanical engineering and his M.S. from Korea University in control engineering. Before joining UCF in 2018, he was a postdoctoral research fellow at the University of Michigan.



PRESENTER 3:

FAN YAO

Assistant Professor
Electrical and
Computer
Engineering

Understanding and Enhancing Microarchitecture Security in the Era of AI and Emerging Hardware

Recent developments of adversarial exploitation rooting in hardware such as microarchitectural attacks and rowhammer have forcibly opened a new chapter for computing system security. The underlying hardware, or internal threats, are at the center of future attacks and defenses. The security prospect of future computing is even more concerning with burgeoning of AI and machine learning techniques, which are ubiquitously integrated into our daily lives to perform security-sensitive tasks such as autonomous driving, recognition and access control. Dr. Yao will share efforts in investigating and improving the security of computing systems from the perspectives of architectures, new memory technologies and the emerging AI paradigm.

Dr. Yao's research interests include computer architecture, security and energy-efficient computing. His current research focuses on investigating information security and performance in emerging processor/memory architectures and exploring the implications of hardware-based threats on emerging applications including machine learning. His research group, the Computer Architecture and System Research Lab, publishes in many top computer architecture and system security venues. Dr. Yao received his Ph.D. in computer engineering from George Washington University where he received the Best Dissertation Award.