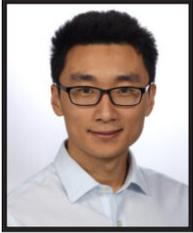




# FACULTY RESEARCH TALKS

## LISTEN. LEARN. COLLABORATE.

Zoom talk | Friday, Jan. 27, 2023 | Noon to 1 p.m.



PRESENTER 1:

**PENG "PATRICK"  
SUN**

Assistant Professor,  
Civil, Environmental  
and Construction  
Engineering

### **UAV Sensing System for Municipal Solid Waste Landfill Monitoring and Water Ponding Issue Detection**

Municipal solid waste (MSW) landfills need regular management and maintenance to ensure proper operations and meet environmental protection requirements. They must be monitored for emitted landfill gases into the environment and for potential settlement on MSW landfill covers, which requires time-consuming, labor-intensive surveillance. Dr. Sun is investigating a UAV-based sensing approach and data collection/analysis method to monitor landfills, and also detect water ponding issues using multimodal sensor fusion.

Prior to coming to UCF in 2020, Dr. Sun obtained his Ph.D. from Rice University and postdoc training from the University of Michigan. He is a passionate researcher for smart sensors and sensing systems, incorporating scientific and engineering understanding of the built environment and how it affects people. Dr. Sun has expanded his research into UAV-based remote sensing and its applications in environmental engineering and water resource engineering. His research is supported by FDEP's Hinkley Center and FDOT.



PRESENTER 2:

**YONGHO SOHN**  
Pegasus Professor,  
Materials Science  
and Engineering

### **Metallic Alloy Development for Additive Manufacturing (3D Printing)**

Additive manufacturing (AM), or 3D printing, of metallic alloys is a disruptive technology that can produce components with geometrical complexity and customization, allowing for the design of new and modified alloys to properly utilize thermo-kinetic environments. Dr. Sohn will introduce an in-laboratory, hands-on, closed-loop experimental research capability established at UCF for gas atomization and laser powder bed fusion, along with efforts in microstructural analysis and control to develop new and modified alloys for a variety of engineering applications, including machine learning process optimization.

Dr. Sohn's research and teaching interests include metallic alloy powder processing and AM, microstructural analysis and control, multicomponent intrinsic and interdiffusion in multiphase alloys, metallic nuclear fuels-cladding, and protective metallic/ceramic coatings for high-temperature applications. He received his B.S. and M.S. from Worcester Polytechnic Institute in mechanical and materials engineering, respectively. Dr. Sohn earned a Ph.D. in materials engineering from Purdue University, and spent two years as a post-doctoral research scholar at the University of Connecticut. He is a Lockheed Martin Professor of Engineering, a Fellow of ASM International and an NSF CAREER award recipient. Dr. Sohn received the Outstanding Materials Engineer Award from Purdue University and the Engineer of the Year Award from the Korean-American Scientists and Engineers Association.



PRESENTER 3:

**AMR A. OLOUFA**  
Professor,  
Civil, Environmental  
and Construction  
Engineering

### **Truck Diversion Using Real-time Traffic Data**

In this talk, Dr. Oloufa will discuss his group's research to improve the efficiency of transportation networks, in particular, using emerging lidar and camera technology applications for commercial vehicles. In this talk, he will discuss an FDOT project for detecting accidents in real-time, using GIS technologies to route truck traffic around accident locations.

Dr. Oloufa's research is focused on practical applications of cameras, thermal sensors and lidar in construction and transportation engineering. Before coming to UCF, he started the construction engineering program at the University of Hawaii before moving Penn State. He joined UCF in 1999 to establish the construction engineering program, leading and renewing its accreditation with ABET. It is now the only ABET-accredited construction engineering program in Florida. Dr. Oloufa received his Ph.D. in civil engineering from U.C. Berkeley. He is a former chair of both the American Society of Civil Engineers Construction Research Council and the Construction Division of the American Society of Engineering Education.