Dr. Nasim Uddin

Professor, Graduate Program Director

University of Alabama Birmingham

Wednesday, September 23, 2020, 2:00 – 3:30 p.m.

Hosted via Zoom

1 PDH Provided

Register at: https://www.eventbrite.com/e/120442056433/

Drive-by and Fly-by Bridge Monitoring and Damage Detection Technology

Bridges are key components of the transportation network. To maintain their structural integrity, it is essential to estimate the extent and location of the structural damage through periodic monitoring. Traditional bridge health monitoring collects vibration data using sensors for damage assessment, which is expensive and time-consuming. An alternate approach, indirect measurement is receiving increasing attention. One can extract bridge dynamic properties from the responses of a passing vehicle, which is known as 'drive-by' inspection. Although this indirect measurement has many advantages, the data in measured vehicle responses are often too weak for extraction of relevant bridge properties or contaminated by noises. Dr. Uddin's group has developed algorithms to improve the performance in 'drive-by' inspection, based on robust signal processing tools such as wavelet transform and Hilbert transform. Unmanned aerial vehicles (UAVs) allow remote monitoring of bridges using visual inspection, especially for areas where an inspector cannot reach. In addition, UAVs can wirelessly charge sensor installed on bridges and transmit data with sensors (on the bridges) and cloud. UAV's can essentially work as fly-sensor. Dr. Uddin's group has developed a 'fly-by' bridge monitoring system, which is designed to monitor bridge health, check truck loads, and provide other quantitative information. Details will be discussed in this webinar.

Dr. Nasim Uddin is a Professor and the graduate program director in the Department of Civil, Construction, and Environmental Engineering at the University of Alabama at Birmingham. His research program focuses on fly-by sensing and monitoring of built infrastructures using UAVs and robotics, natural hazard analyses and disaster risk management. His current NSF projects include Mobile Automated Rovers Fly-By (MARS-FLY) for Bridge Network Resiliency. He serves as the **Editor-in-Chief of the ASCE Natural Hazards Review Journal.**