The Department of Civil and Environmental Engineering at the University of Houston presents...

**CIVE 6111 Graduate Seminar**

# Deep learning-based Post Hurricane Damage and Property Loss Estimation

**Deepank Singh, Ph.D. Student**
Department of Civil & Environmental Engineering
University of Houston, Houston, Texas

**Friday, April 15, 2022**
2:45pm-3:45pm
Classroom Business Building (CBB) - Room 122
Zoom: https://uh-edu-cougarnet.zoom.us/j/98311392530

**Abstract**
In the aftermath of disasters, damage assessments are required to enable safe reoccupation of buildings and government resource allocation to homeowners. Generally, these inspections are done manually which is very time-taking and laborious and even risky. Also, after the disaster resource allocation strategies tend to unfairly penalize low-income households. The objective of this research is to understand how to leverage novel multi-temporal ultra-high-resolution (MTUHR) oblique aerial imagery for rapid and equitable decision making to reduce the number of manual assessments required, and provide valuable insight for equitable distribution of resources. The proposed approach involves building a new dataset and applying deep learning-based reliable damage assessments for safe reoccupation, and image-based property loss estimation. The research will establish a novel benchmark dataset of MTUHR imagery to enable these advances. The research will study supervised and semi-supervised deep learning methods to take advantage of multiple pre- and post-disaster views of damaged structures.

**Bio**
Deepank Singh is a PhD student in the department of Civil and Environmental Engineering working under supervision of Dr. Vedhus Hoskere. He completed his bachelor's in civil engineering from MNIT Jaipur, India (2021) and later joined UH as a Ph.D. student. During his internships at IIT Delhi and IIT (BHU), he conducted research on machine learning and digital image processing applications in civil engineering. His research is focused on computer-vision based deep learning techniques for structural health monitoring.