Opening for 2 funded PhD Positions at the University of Massachusetts, Amherst, USA on 3D printing, machine learning and civil infrastructure

The research group of Dr. Simos Gerasimidis in the Department of Civil and Environmental Engineering at UMass is hiring 2 PhD students to study:

1. 3D printing and Steel Structures: Innovation in Repairs

In recent years there has been a significantly increased interest in additive manufacturing (also frequently referred to as 3D Printing), a design platform largely unexplored within infrastructure projects. The PhD student will build on recent findings and explore further the feasibility of 3D printing applications for highway construction and maintenance in the Commonwealth of Massachusetts. The research aims at exploring the feasibility of additive repair technologies for corroded steel. Different additive manufacturing solutions and repair technologies will be examined in the lab and on-site. Research will also explore the key factors related to the different repair technologies and equipment investigated that can impact the success of an attempted repair (Example: velocity of material being deposited).

2. AI and Machine Learning - based predictive tools for structures: Laser Scanning of deteriorated structures

With the advancement of light detection and ranging (LiDAR) technology, point cloud data has been increasingly available and widely employed in transportation and infrastructure applications, thanks to its accurate and repeatable geometry measurement. A recent laboratory-based study explored the potential of using LiDAR technology to acquire field data on beam end conditions with promising results. The research aims at evaluating the performance of point cloud data in measurement and classification of important parameters that have not yet been typically measured in the past. There is an emerging need to leverage the strength of LiDAR point cloud data and incorporate such a promising technology into bridge inspection practices if it deems feasible. The research ultimately aims at using Machine Learning and AI to develop powerful predictive models from LiDAR data.

The PhD student will belong to the Department of Civil and Environmental Engineering of UMass (https://cee.umass.edu/) and collaborate with multiple diverse stakeholders across disciplines including computational mechanics, additive manufacturing, robotics, construction, experimental mechanics.

For applications, please send a CV, a brief cover letter and a list of three references with contact information to sgerasimidis@umass.edu.

The preferred starting date is September 2022. Review of applications will start immediately and continue until the position is filled.