LEARNER: Our Adventure into NSF’s Convergence Accelerator Program

Jason Moats (TEEX), Ranjana Mehta (ISEN)

In 2019, a team of researchers and practitioners from Texas A&M, Virginia Tech, the University of Florida, TEEX and private industry collaborated on an ambitious NSF funded project to use innovative and emerging technologies to enhance and accelerate the development of the emergency response (ER) workers. The project, Learning Environments with Augmentation and Robotics for Next-gen Emergency Responders (LEARNER), focuses on developing an adaptive and personalized mixed-reality learning platform that has physical, augmented, and virtual reality components, where ER personnel will learn to work effectively with two human augmentation technology (HAT) classes: powered exoskeletons (EXO) and head-worn AR interfaces (AR). We plan to develop, integrate, and assess EXO and AR learning modules into the LEARNER system across different access levels (home to field house to training centers). Our presentation will discuss the user-centered design process, pilot studies and lessons learned with ER stakeholders on use-inspired HATs in use-case ER scenarios, and our vision for achieving scale of the LEARNER prototype in emergency response domain to transform the emergency responder workforce. The presentation will be conducted by Drs. Ranjana Mehta, Director of Texas A&M’s Neuro-Ergonomics Lab and Jason Moats, Director of the TEEX Technology & Innovation Center.
Estimating and Addressing Disaster Survivors’ Unmet Needs: 
A Social Vulnerability and Social Infrastructure Approach

Michelle Meyer, Mason Alexander, Haley Yelle, Carlee Purdum

This presentation will overview Dr. Michelle Meyer’s new Faculty Early Career Development (CAREER) 
grant from NSF. This grant, which began this summer, will further the understanding of how 
communities can effectively leverage nongovernmental resources to meet housing-recovery needs after 
disasters. As disaster costs and disaster displacement increase, governmental assistance to individuals 
and private insurance often are inadequate to ensure full recovery for all affected people. Nonprofit and 
philanthropic resources can address unmet needs of disaster survivors if used effectively and efficiently. 
Locally led nonprofit "long-term recovery groups" are often charged with distributing these resources, 
but little is known about these organizations' efforts or what makes their operations more or less 
effective in promoting community recovery and resilience. This project will assess how philanthropic 
housing-recovery practices affect individual unmet needs, post-disaster equity, and the overarching 
philanthropic ecosystem of affected communities. This project will use the research results to inform 
and test a training program for locally based nonprofits, government officials, and foundations that will 
 improve their effectiveness in managing philanthropic resources for disaster recovery. Educational 
outcomes also include undergraduate research experiences to foster under-represented student 
engagement in STEM and graduate student internships coordinated with disaster recovery nonprofits to 
further their data management skills. New PhD student Mason Alexander, undergraduate research 
intern Haley Yelle, and Hazard Reduction & Recovery Center postdoc Dr. Carlee Purdum are the 
beginning of this research team. The presentation will review both the scientific and educational 
program that grant will support.