

# *The Whole is ~~Other~~ Better than Some of its Parts*

## Connecting neck up and neck down HF/E through NeuroErgonomics

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**Abstract:** Every human (re)action with work systems is orchestrated by an integrated effort between the human's mind (and brain) and motor interactions. By shedding light on the brain, using optical brain imaging techniques, basic research in our lab has advanced knowledge of human neuromuscular functioning, particularly under stress, and in underserved populations. These efforts provide the foundation for our applied research and technology development

efforts that focus on augmenting and supporting embodied cognition through equitable multimodal interface designs, wearable technologies such as exoskeletons, fluent and trustworthy human-robotic interactions, brain-computer interfaces, and neurostimulation. The seminar will examine the **mind-motor-machine nexus** to understand, quantify, and predict human performance when interacting with emerging technologies (unmanned, collaborative, and wearable systems) in safety-critical extreme environments (e.g., emergency response).

**Bio:** Ranjana Mehta is Associate Professor in the Wm. Michael Barnes Department of Industrial and Systems Engineering and the J. Mike Walker '66 Department of Mechanical Engineering at Texas A&M University. She is also a graduate faculty with the Texas A&M Institute for Neuroscience at Texas A&M University, director of the NeuroErgonomics Laboratory, co-director of the Texas A&M Ergonomics Center, and a faculty fellow with the Center for Remote Health Technologies and Systems, the Center for Population Health and Aging, and Mary Kay O'Connor Process Safety Center. Her research on understanding and mitigating fatigue and stress-related variability in worker health and performance has been funded by the NIH, NSF, NIOSH, and the National Academies of Sciences, Engineering, and Medicine, and several industries and awarded by the Human Factors and Ergonomics Society, the Institute of Industrial & Systems Engineers, and the American Public Health Association. She serves on the editorial board of *Frontiers in Neuroergonomics*, *IISE Transactions on Occupational Ergonomics and Human Factors*, and *International Journal of Industrial Ergonomics* and is an elected Executive Council Member of the Human Factors and Ergonomics Society (HFES) and Chair of the HFE WOMAN group at HFES.