

Case School of Engineering

Seminar

Hosted by Case Advancement Fellows

Addressing Racial and Phenotypic Bias in Emerging Non-invasive Neurotechnologies

Dr. Jasmine Kwasa

Post-doctoral Research Fellow

Carnegie Mellon University

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11:30 AM

Schmitt Auditorium



Abstract: To provide quality care for all, biomedical engineers must develop effective and equitable medical solutions. Recent work from our team showed that typical EEG systems, the standard of care for neurological monitoring (e.g., epilepsy), do not work well for individuals with the coarse, dense, and curly hair common in the Black population (Etienne et al., 2020; IEEE EMBC). With more than 1 billion individuals of African descent across the globe, this not only compromises care for a significant portion of the population, but also excludes these groups from basic neuroscience research studies. Our team developed the first solution to this problem by creating Sèvo Systems, a simple yet effective set of devices that leverage the strength of braided hair to improve scalp contact during brain recordings in individuals with coarse, dense, and curly hair. We demonstrated, in a lab setting, that Sèvo lowers electrode-to-scalp impedance compared to standard electrodes tenfold. In this talk, I will describe the Sèvo system and outline our ongoing assessments of its effectiveness in both research and clinical settings. Our work is the first step towards mitigating phenotypic biases embedded in this popular technology that may lead to misdiagnosis in the clinic and misunderstanding of brain science in research settings.

Biography:

Jasmine Kwasa, PhD, is an NIH K00 post-doctoral fellow in the Neuroscience Institute at Carnegie Mellon University (CMU). Jasmine earned her B.S. from Washington University in St. Louis, her M.S. from Boston University (both in Biomedical Engineering), and her Ph.D. in Electrical and Computer Engineering from CMU. Her ongoing post-doctoral research seeks to develop neurotechnologies, such as EEG and fNIRS, optimized for coarse, curly hair and dark pigmentation (melanin) with collaborators at CMU. She is also a neuro-ethicist and writes about the future of inclusive neurotech and the history of racial bias in neuroscience, medicine, and technology. Jasmine has received several honors throughout her training, including being named a Ford Foundation Fellow, an NSF Graduate Research Fellow, a Society for Neuroscience fellow, and a "Rising Star in Biomedical Sciences" by MIT. In her free time, Jasmine is a dance fitness instructor and enjoys travel and quality time with her enormous family.