

Neurophysiology-aware Mental Health Screening Using Mobile and Wearable Devices



Manasa Kalanadhabhatta

Ph.D. candidate

University of Massachusetts Amherst

Tuesday, Jan 30th, 2024

12:00 – 13:00 PM

BMI Classroom 4004

Woodruff Memorial Research Building

or

Join us on Zoom link:

<https://zoom.us/j/94655325515>

Meeting ID: 94655325515



EMORY
UNIVERSITY

**Department of
Biomedical Informatics**
Emory University School of Medicine

Abstract: Nearly one in six U.S. children aged 2-8 years has a diagnosed mental, emotional, or behavioral disorder, with actual rates of prevalence likely being even higher. Obtaining an accurate diagnosis is essential for facilitating treatment and interventions, but is often challenging due to a range of structural and phenomenological issues. Mobile and wearable devices offer an opportunity to fill this gap by enabling convenient, at-home behavioral screening. However, most screening technologies for young children rely on parent reports or behavioral observations, thus ignoring the neural and physiological underpinnings of behavioral disorders. In this talk, I will present my work on building neurophysiologically-grounded mental health screening tools for preschool aged children. First, I will discuss my research toward developing scalable, at-home assessment tools that use mobile and wearable devices to derive new insights of clinical value. Next, I will describe how neurophysiological measures including brain activity, cardiorespiratory signals, and electrodermal activity can be integrated with behavioral data to improve the reliability of assessment tools. I will conclude by outlining opportunities for future research in behavioral screening tools, including personalization and repeatability of assessments as well as the integration of neurophysiologically informed tools into clinical practice.

Bio: Manasa Kalanadhabhatta is a Ph.D. candidate in Computer Science at the University of Massachusetts Amherst. Her research interests lie at the intersection of ubiquitous sensing, machine learning, and human computer interaction for applications in health and wellbeing. She focuses on developing novel, biologically-grounded assessment tools that enable convenient and scalable screening for behavioral disorders using mobile and wearable devices. Her work has been published in various computer science and interdisciplinary venues, including PACM IMWUT, ACII, JMIR, and Pervasive Health. Her research has been nominated for the NSF ICorps Innovators Jump-Start research commercialization program at UMass Amherst and was awarded a technology development grant from the UMass President's Office. She received the 2023 UbiComp Gaetano Borriello Outstanding Student Award and a Dissertation Award from the Center for Research on Families at UMass Amherst, and was a CRA-WP Grad Cohort for Women scholar.