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Department of Biomedical Engineering

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Date Friday, September 19, 2025
Time 12:00 to 1:00 PM
Location SEC 203

Title: *From Data to Impact: Convergence of Digital Technologies, AI/ML, and Human Factors for Population Health Solutions*

Abstract: Engineering advances in digital health require frameworks that link complex data streams, computational models, and human factors to measurable outcomes. This talk presents methods for moving *from data to impact* by embedding theory-driven constructs into high-dimensional analytics and plug-and-play low-latency Systems on Chip pipelines. We begin with multimodal sensing, electronic health records, wearables, and online communities, as pipelines for extracting behavioral and psychosocial signals. Next, we introduce AI/ML architectures, graph neural networks, topic modeling, and dynamic intent classifiers, that formalize mechanisms of engagement, diffusion, and risk prediction. These models enable scalable inference on communication patterns, adherence, and social influence, illustrated through diabetes self-management networks and peripartum depression discourse. Finally, we integrate human factors engineering and equity constraints into system design via frameworks such as Digilego, ensuring usability and fidelity across diverse populations. Multiple use cases demonstrating this translation from heterogeneous data into robust, adaptive interventions that reduce disparities and improve population health outcomes are discussed.

Bio: Dr. Sahiti Myneni is an Associate Professor in Clinical & Health Informatics at the McWilliams School of Biomedical Informatics, UTHealth Houston, with PhD in Health Informatics and earlier training in Electrical Engineering. Her expertise bridges large language/computational models of social media, multimodal behavior representation (wearables + social phenotyping), and digital health interventions targeted at reducing health disparities. Dr. Myneni spearheads work in Digilego, a consumer-oriented connected health framework, and recently led research on digital health technologies for high-risk pregnancy management, developing product architectures that integrate clinical care, theory-driven behavior change, and real-time engagement. In her role as Co-Director of the Center for Digital Health & Analytics, she leads translation of data-driven methods and innovations with clinical and public health partners. She is also Co-director of the Innovations in Cancer Prevention Training Grant (CPRIT). Her goal is transforming ubiquitous digital signals into human-centered platforms providing just-in-time, evidence-based support. Her work is funded by the National Library of Medicine, the National Cancer Institute, the National Institute of Aging, the Agency for Healthcare Research and Quality (AHRQ), and the Cancer Prevention Research Institute of Texas (CPRIT).