Towards Intelligent Wearable Assistants for Everyday Physical Interaction

BIOGRAPHY

Yiyue Luo is an Assistant Professor at the University of Washington ECE. She received her Ph.D. degree in EECS from MIT in 2024, advised by Professor Wojciech Matusik and Professor Tomas Palacios. Before joining MIT, she received her B.S. in Materials Science and Engineering at University of Illinois Urbana-Champaign. Her research lies at the intersection of digital fabrication, human-computer/robot interaction, and applied AI. Her research on integrated intelligent textiles has been published in interdisciplinary journals, e.g., Nature Electronics and Nature Communications, top human-computer interactions, robotics, and machine learning venues, e.g., CHI, UIST, CVPR, ICRA. She has been supported by UW Royalty Research Fund, UW CoMotion entrepreneurship fellowship, and fellowship from MathWorks, Google, and Accenture.

ABSTRACT

Everyday life is shaped by continuous physical interactions, touching, grasping, and moving, that underlie human behavior, health, and well-being. Intelligent wearable assistants aim to capture and enhance these interactions by seamlessly sensing, modeling, and responding to the body's physical dynamics. In this talk, I will present a series of textile-based systems to demonstrate the potential of intelligent wearables as everyday assistants. Examples include machine-knitted tactile garments that sense and guide motion, embroidered gloves for tactile interaction transfer, and intelligent carpets that monitor whole-body activities. These prototypes illustrate how textiles can serve as scalable and versatile platforms for building intelligent assistants that integrate into daily routines, bridging human physical interactions with computational intelligence