IPAI SEMINAR SERIES

"SOFT WEARABLE INTERFACES AS MULTIMODAL PLATFORMS FOR AI-ENHANCED SKILL LEARNING"

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DR. JIAKUN YU

PURDUE UNIVERSITY

Institute for Physical Artificial Intelligence

Physical skill learning in sports, rehabilitation, and daily activities depends on how precisely we move and how effectively we receive feedback. However, most existing tools capture only coarse kinematics and provide generic advice that is detached from the body. In this talk, I will present soft wearable interfaces as multimodal platforms that bridge physical sensing and AI-enhanced guidance. I will discuss techniques for creating customizable textile and on-skin wearables that capture different sensing modalities on the body surface, such as stretch, bending, and contact, as well as deeper muscle activity. Building on these signals, I will introduce an interactive coaching system that combines body sensing with large language models and can be easily embedded into wearable devices to deliver adaptive, conversational guidance during practice. Finally, I will outline ongoing work that uses wearable devices to integrate dense muscle sensing with electrical stimulation, adding a new modality for influencing and studying movement directly through the body. Throughout the talk, I will highlight design opportunities and challenges for future soft, AI-augmented wearables that support physical skill learning.

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