



Colloquium

Mechanical Engineering Lecture in Design

Smart Interfaces and Interactions for the Physical World



Karthik Ramani

Donald W. Feddersen Professor of Mechanical Engineering
Purdue University

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The convergence of many factors such as low cost sensors, electronics, computing, fabrication, and more recently machine learning have created the potential for changing the way users engage with the physical world. This talk will explore and demonstrate how we can create new interfaces and interactions that leverage our knowledge of the physical world. In the first part of the talk we will explore how any consumer with little knowledge of computers can repurpose everyday objects and shapes to quickly customize them. As a result of low thresholds and simple user interactions with lower cognitive loads, users are shown to explore multiple creative pathways in collaborative ideation. In the second part we discuss how users can (a) interactively construct and control robots with the help of mobile AR interfaces, (b) transform everyday objects to interactive objects using soft interfaces, and (c) enable instant discovery and localization of the surrounding smart internet-of-things (IoT), while also spatially registering them for various types of interactions. In the last part of the talk we will examine how deep learning can be used in geometric interfaces and interactions. We conclude with my perspectives on increasing the impact, visibility, and effectiveness of design-driven research and helping students learn.