

Blending the Physical and the Virtual: Multi-Modal Human-Computer Interaction for Music

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Abstract

We are at the dawn of a new era in human-computer interaction that is finally starting to escape the limited possibilities of the screen and the keyboard. In this talk I will broadly outline a vision of how the physical and virtual worlds can blend through expressive musical interaction. Embodiment (and consequently having a body) is fundamental in realizing the vision of creating artificial musicians capable of improvising with human musicians. At the heart of this quest is the challenge of achieving expressivity and musicianship. I will describe several projects that me and my students have worked on that can be viewed as steps toward realizing this vision. These projects include: the sound plane, a new 3D highly responsive touch surface for playing music, the MechDrummer a state-of-the art percussion robot that is capable of human-like control of timing and dynamics, and MR:MIN a mixed reality environment for teaching how to play the Theremin.