Exploring Virtual Reality and Embodied Computational Reasoning

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The increasing sophistication and availability of Augmented and Virtual Reality (AR/VR) technologies wield the potential to transform how we teach and learn computational concepts and coding. This workshop examines how AR/VR can be leveraged in computer science (CS) education within the context of embodied learning. It has been theorized that abstract computational concepts, such as data, operators, and loops, are grounded in embodied representations that arise from our sensorimotor experience of the physical world. For instance, researchers have shown that when CS students describe algorithms, conditionals, and other computational structures, they frequently gesture in ways that suggest they are conceptualizing interactions with tangible objects. Can learning to code become a more intuitive process if lessons take into account these types of embodied conceptual phenomena? This two-hour workshop explores 1) theories of embodiment and 2) new and existing tools and practices that support embodied CS learning – ranging from Papert's LOGO turtles to a preview of an innovative 3D spatial coding platform for AR/VR under development by our group. Other open-source and commercially available resources will also be examined through streamed video demos and a hands-on break-out session for participants with VR headsets.

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Time: 11:00 AM to 1:00 PM PDT