

Multi-sensor environments, consisting of dense arrays of sensors, are emerging at several universities to enable the collection of large quantities of data on the interactions that humans with their everyday environments. Large data on freeform human motions and object behaviors will provide a rich opportunity to inform fields such as software engineering, business, physiotherapy, music, theater, and sports, on multi-person human interactions, and will also enable us to provide human-centric understanding to the next generation of assistive robotic devices. In this talk, I will discuss my research on capturing data using large multi-sensor systems designed with off-the-shelf ubiquitous sensors such as the Raspberry Pi and Microsoft Kinect. Our studio at Clarkson University has a five-Kinect two-microphone environment for capturing large scale human motion, a small microenvironment of eight Raspberry Pi cameras for capturing dynamic tabletop objects, and a rotating camera system for capturing static objects. My talk will discuss addressing the challenges of spatially calibrating and temporally synchronizing dense sensor arrays.