

Abstract

In this talk, I will describe how we design new IoT devices that analyze the surrounding radio signals to infer our movements, vital signs and even emotions. In particular, I will show how we can accurately track the 3D motion of people from the wireless signals reflected off their bodies, even if they are behind a wall. Such fine-grained tracking can also recognize our gestures, enabling us to control smart home devices simply by pointing at them. I will also describe mechanisms and algorithms to learn humans' breathing, heart rates, and basic emotions from the reflections of wireless signals off their bodies, and without requiring them to hold or wear any device.