Abstract:

Radar has proven to be an effective tool for urban sensing and through wall imaging. Now, the radar technology is moving towards indoor monitoring and assisted living. This talk discusses the advances made in through-the-wall radar imaging over the last decade. It states the different objectives of research and development efforts in this area, and describes the role of clutter, target ghosting, and multipath on imaging quality. We summarize effective approaches for wall clutter mitigation and multipath suppression and exploitation. The talk illustrates the role of Doppler, microDoppler, and change detection in indoor moving target detection and localization. It includes both distributed and co-located system configurations. We show how compressive sensing and sparse reconstruction techniques can be employed to enhance behind the wall target imaging and to relax constraints traditionally imposed on data sampling and acquisition. We then discuss recent research efforts in brining radar inside homes to monitor human motions to detect normal and abnormal motion activities. Radar can be a valuable non-wearable device to alert first responders in case of human fall. This is an emerging and important application for assisted living and the broad area of “aging-in-place”