Bio-Radar: Non-Contact System for Vital Signal Acquisition

Background and challenges

The proposed Bio-radar system can measure vital signals, namely the respiratory signal, by using the Doppler effect that affects the reflected signal due to the distance change between the radar antennas and the person’s chest-wall. Since the vital signal’s extraction depends on the distance variation due to the chest-wall motion, any involuntary movement from other body parts will be perceived as an interference in the respiratory signal recover accuracy. Therefore, a solution to compensate the motion caused by other body parts is required to enhance the signal acquisition.

Bio-Radar main applications:

- Bedridden patients monitoring;
- Sleeping monitoring;
- Monitoring system in cars.

Description and main innovation

- Explore the most suitable front-end features, such as, the radar operation mode, the carrier frequency and the antenna’s radiation pattern.
- Implement a chest-wall mapping in order to distinguish the chest-wall motion due to respiration from other body motions, such as arms or shoulders.
- Apply MIMO and/or beam-forming techniques for the mapping system.