Shuqin Dong received the B.S. degree in electronic and information Engineering from Xidian University, Xi’an, China, in 2017 and the M.S. degree in electronic science and technology from Zhejiang University, Hangzhou, China, in 2020. From 2020 to 2021, she was a software algorithm Engineer in Huawei, China. Now she is pursuing the doctor’s degree in electronic and information in Shanghai Jiaotong University, Shanghai, China. She received IWS2022 FLASH Competition Best Paper Award. Her research interests include bio-radar application, analog/RF systems and signal processing algorithm.

Project topic: Doppler Cardiogram Detection Based on Millimeter Wave Radar and Its Biomedical Applications

Project abstract:

The non-contact radar sensing technology can obtain the human vital signs by measuring the displacement generated by the heartbeat and respiration on the chest wall. High-sensitivity millimeter-wave radar system can capture fine cardiac volume change trajectory, and obtain the "Doppler Cardiogram (DCG)" that has validated to have correspondence with electrocardiogram (ECG).

This project will focus on the DCG detection in clinical environment, investigate and analyze the feasibility of cardiac time intervals measurement, diagnosis of cardiac diseases and sleeping stages classification. While the custom-designed radar system and the novel signal processing technique should be developed to realize the accurate detection of DCGs in the presence of respiration. Moreover, the accurate deep-learning-based diseases detection and sleep staging models will be exploited to achieve the research goal.