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Title	Elderly care: Human activity recognition using radar pre-processing techniques to enhance classification accuracy with cyclostationarity
Abstract	Radar-based human activity recognition is considered as a competitive solution for elderly care health monitoring problem, compared to alternative techniques such as cameras and wearable devices. However, raw radar signals are often contaminated with noise, clutter, and other artifacts that significantly impact recognition performance, which highlights the importance of prepossessing techniques that enhance radar data quality and improve classification model accuracy. In this paper, we have proposed two different human activity classification model incorporated with pre-processing techniques. We introduce wavelet denoising methods into a cyclostationarity-based classification model, resulting in a substantial improvement in classification accuracy. To address the limitations of conventional pre-processing techniques, we propose a deep neural network model called Double Phase Cascaded Denoising and Classification Network (DPDCNet), which performs end-to-end signal-level classification and achieves state-of-the-art accuracy. The proposed models significantly reduce false detections and would enable robust activity monitoring for older individuals with radar signals thereby bringing the system closer to a practical implementation for deployment