

ABSTRACT

The classification of human activity using radar is one of the technologies developed in Human Activity Recognition (HAR) without contact. The use of radar for the classification of human activity becomes important in order to improve safety and enhance user privacy. This research aims to develop a human activity classification system such as sitting, standing, walking, and falling using FMCW radar based on point cloud data. The FMCW radar used produces 3D point cloud data output which is then processed into 3D Voxel form to improve accuracy in reading human activity classification. This system uses a standard 3D deep learning algorithm to improve the accuracy of human activity classification in the form of 3D Voxel. With this research, it is expected to contribute to the development of HAR that is more effective, accurate, and applicable in various environments both medical and industrial in order to improve user safety and privacy. This research also explores the effect of windowing on model performance in order to obtain the best windowing range that can produce an optimal voxel representation. The model architecture used is 3D Convolutional Neural Network (3D CNN). From the experimental results, the use of the proper windowing for windowing is very influential on the system accuracy. Result in this research with accuracy 94% and using windowing 30.

Keywords: 3D Voxel, Human Activity Classification, Point Cloud, Radar FMCW