

ABSTRACT

The deaf and speech impaired have difficulty interacting with the general public. Especially someone who is newly deaf or speech impaired. This is due to the lack of public understanding of sign language. So, we need a communication system between the two. One of these systems is the introduction of hand gestures based on FMCW (Frequency Modulated Continuous Wave) radar using the SIBI (Sistem Isyarat Bahasa Indonesia) as a national sign language that the government has standardized.

This study introduces a hand gestures (sign language) detection device based on FMCW radar with a deep learning method with the CNN (Convolution Neural Network) algorithm. The FMCW radar will transmit a transmission signal and then acquire the reflected signal from the detected hand motion detection, which is first converted into two dimensions using FFT (Fast Fourier Transform) to produce a time-frequency dataset. The dataset will be used as a training and test sample on CNN. The results of CNN data processing will be used as a SIBI word classifier to facilitate communication between the speech-impaired and the community.

This final project uses five movement classes with 1310 datasets for each class. Classification uses 3 architectures with each having 1 convolution layer, 2 convolution layers, and 3 convolution layers to get the best model by changing the comparison parameters of the number of strides, the type of pooling layer and the number of epochs. The final result shows the best model for SIBI language movement class classification with 99% accuracy.

Kata Kunci: *SIBI Sign Language, FMCW Radar System, CNN.*