ABSTRACT

Heart arrhythmia involves rapid changes in normal heart rate patterns, affecting frequency, regulation, and the origin of electrical stimulation. A normal heart beats between 60-100 bpm; rates above 100 bpm are tachycardia, and below 60 bpm are bradycardia. An Electrocardiogram (EKG) is crucial for heart condition diagnosis, yet its manual analysis requires specialized skills and is prone to errors even among healthcare professionals.This study aims to develop a Convolutional Neural Network (CNN) model to classify normal and abnormal heart rhythms using EKG signal images, aiming for higher accuracy and diagnostic efficiency than manual methods. Multi-lead EKG datasets were collected from Dok II Jayapura Regional Hospital, initially in .pdf format and converted to .jpg for organization. The CNN model includes convolutional, pooling, and fully connected layers for feature extraction and classification. It effectively distinguishes between normal and abnormal heart rhythms, with the VGG method achieving the highest accuracy of 87.4% in comparative experiments with Mobilenetv2 and CNN. Despite some signs of overfitting, these results are valuable for future research, emphasizing the impact of limited datasets on model accuracy.

Keywords: *Arrhythmia, Convolutional Neural Network (*CNN*), Mobilenetv2 ,* ECG *Signal, VGG.*