ABSTRACT

Measurement of blood pressure through a cuff or arm sleeve is generally still used in the medical world. While the measurement through the cuff is an indirect or non-invasive measurement, this of course will affect the results of blood pressure measurements which will then be used as a benchmark for a person's blood pressure whether he suffers from hypertension or not. This problem can be solved by developing a system to identify blood pressure from ECG (Electrocardiograph) and PPG (Photoplethysmography) signals. From these signals, Daubachies 6's Wavelet Transform can be used as preprocessing with 60,000 data, each 1,000 data represents 1 individual and 1 signal. Then calculate the Pulse Transit Time (PTT) value using only the peak signal from the ECG and PPG signals. Based on ECG, PPG and blood pressure data, an accurate classification scheme can be developed using the Random Forest Classification machine learning algorithm. The classifier was optimized and applied to verify the performance of Random Forest which was able to classify with normal class 15 people, prehypertension 15 people, stage 1 hypertension were 8 people, and stage 2 hypertension were 20 people with the best accuracy using parameter $k = 6$ with Number of Tree or $T = 1$ and Maximum Number of Splits or $S = 30$ which has an accuracy of 96.7% and has the lowest accuracy of 50%.

Keywords: Blood Pressure, ECG, PPG, Wavelet Transform, Classification, Random Forest