Abstract – Coronary Heart Disease (CHD) is a condition in which the heart's blood supply is blocked or disrupted by fat in the coronary arteries. This disease is the most significant cause of death in Indonesia. CHD can be detected based on the Heart Rate Variability (HRV) index of the Photophletysmograph (PPG) signal taken from a smartphone's camera. However, the use of PPG from smartphone to detect CHD is still rare in real-world applications. Moreover, studies on CHD detection based on PPG signal are also difficult to be found in the scientific literature, especially those discussing feature selection on PPG signals in detecting CHD. Currently, the Electrocardiogram (ECG) signal still dominates as a signal for detecting CHD. This research fills this research gap by proposing a study on the feature selection of PPG signal taken from smartphone's camera to detect CHD. The detection performance value obtained is highly dependent on the features used. Using irrelevant features can reduce detection performance in the classification model. Therefore, feature selection methods are essential to select optimal features to improve detection performance. There are three feature selection methods studied in this research, i.e., Analysis of Variance (Anova), Pearson Correlation, and Recursive Feature Elimination (RFE). Furthermore, a classification algorithm, called as K-Nearest Neighbors, has also been chosen to create a machine learning model based on the PPG features. The experimental results show that the Pearson Correlation feature selection method produces better CHD detection performance compared to the other two methods (Anova and RFE). CHD detection performance using the Pearson Correlation produces an accuracy of 90.9%, sensitivity of 75%, and specificity of 100%.

Keywords: Coronary Heart Disease, Heart Rate Variability, Photophletysmograph, Electrocardiogram, Feature Selection