

## Abstract

Heart attack or Myocardial Infarction is a cardiovascular disease characterized by the death of the heart muscle. Blockage of blood vessels is one of the causes of heart attacks. Where blood flow to the heart becomes obstructed, where blood is the primary tool for circulating oxygen throughout the body. In general, cardiovascular disease screening can be done by detection using electrocardiogram (ECG), phonocardiogram (PCG), and photoplethysmogram (PPG). Of the three signals, detection using the PCG signal is rarely used. The use of deep learning is also one of the methods used by many previous researchers to classify an object. However, from several previous research, the use of the deep learning algorithm on PCG signals, especially in cases of heart attacks, has not yet been carried out. To overcome these problems, this final project proposes developing a deep learning model to predict heart attacks based on PCG signals. The methodology used to complete this final project is 1. Literature studies on predicting heart attacks with PCG signals, 2. Developing predictions of heart attacks based on deep learning, 3. Analyzing the comparison of the performance of the algorithms used. In development, this research uses the CNN, RNN, and DNN algorithms. For CNN, two architectures are used, namely Simple CNN and VGG-16. PCG signal data was obtained from Hasan Sadikin Hospital Bandung, Indonesia. Furthermore, this research also compares each of the tested algorithms. It aims to see the performance of each algorithm and determine the best algorithm. The results show that the algorithm that produces the highest performance is CNN with the VGG-16 architecture, which has a sensitivity of 95.4%, a specificity of 97.8%, and an accuracy of 96.6%. The resulting performance is quite good, but with better data quality, it is expected to produce a more satisfactory performance.

**Keywords:** Heart attack, PCG, classificatio, deep learning.