

ABSTRACT

Cardiovascular diseases, particularly heart disease, are the leading cause of death worldwide. With a high prevalence, it is crucial to regularly monitor heart conditions to detect abnormalities early. One of the tools used to monitor heart conditions is the Electrocardiogram (ECG), which can accurately detect heart rhythm disorders. This study aims to develop a desktop-based application that can recognize ECG signals, integrated with a cloud system, and support monitoring by healthcare professionals through a web platform.

The design of this application includes two main components: a desktop application for ECG signal analysis and a cloud system for data storage. The application is equipped with ECG signal analysis capabilities with a real-time database system using the Multi-Layer Perception algorithm and supports centralized data storage in the cloud for easier access by users. The application was tested by evaluating the accuracy of ECG signal analysis and data transmission to the cloud. The application includes an ECG analysis feature to detect abnormalities such as bradycardia and tachycardia, as well as interactive graph visualization.

The test results show that this application can detect heart abnormalities with an accuracy of 92% for bradycardia, 92% for tachycardia, and 89% for arrhythmia. The data transmission time to the cloud is 4 seconds with a synchronization success rate of 100%. The testing also demonstrates that the application can enhance the efficiency of early detection of cardiovascular disorders and expedite more accurate medical decision-making. Additionally, the application ensures patient data security through Row Level Security (RLS) and provides a more efficient and secure solution compared to conventional heart monitoring methods.

Keywords: Electrocardiograf, Signal Analysis, Heart Monitoring, Cloud, Desktop Application.