

***Angina Pectoris Screening System Using the Random Forest Algorithm at RS
Perkebunan Jember Klinik***

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ABSTRACT

Angina pectoris is one of the coronary heart diseases characterized by chest pain caused by reduced blood flow to the heart muscle. Delays in early screening may increase the risk of more serious complications, highlighting the need for a system that can support rapid and accurate screening. Based on a preliminary study conducted at RS Perkebunan Jember Klinik, angina pectoris was among the three most common inpatient diseases in 2024. This study aimed to develop a web-based angina pectoris screening system using the Random Forest algorithm at RS Perkebunan Jember Klinik. This study focused on the development of a machine learning model using the Cross-Industry Standard Process for Data Mining (CRISP-DM) methodology. The research utilized 357 electronic medical records of patients diagnosed with angina pectoris and non-angina pectoris. The Random Forest algorithm achieved an accuracy of 98.61%, precision of 97.50%, recall of 100.00%, F1-score of 98.73%, ROC-AUC of 0.9992, sensitivity of 1.0000, and specificity of 0.9697, resulting in a classification model that was integrated into the screening system for prediction. The system was developed using the Waterfall model. System testing was conducted using the Black Box Testing method, and the results showed that all system functions operated properly. It is recommended that RS Perkebunan Jember Klinik integrate the screening system with the Electronic Medical Record (EMR) system so that the screening results can be utilized as supporting information for clinical decision-making.

Keywords: *Angina Pectoris, Random Forest, CRISP-DM, Waterfall, Screening System, Website.*