Evaluation of Heart Disease Detection Models: Performance Analysis

This document presents a comparative assessment of two heart disease detection models: a rule-based expert system and a Decision Tree machine learning model. The evaluation is based on key performance indicators, including accuracy, precision, recall, and F1-score.

1. Performance Overview

Decision Tree Model:

Accuracy: 99%

Precision: 100%

Recall: 97%

F1-Score: 99%

Expert System:

Accuracy: 41%

Precision: 0%

Recall: 0%

F1-Score: 0%

1. Classification Results

The classification results for both models are represented through their respective confusion matrices, offering insights into their predictive capabilities.

1. Key Findings

The Decision Tree model demonstrates a substantial advantage over the expert system, achieving an impressive 98.5% accuracy compared to the 41.5% accuracy of the rule-based approach. This highlights the constraints of rule-based systems in handling complex medical diagnoses, while machine learning models offer greater adaptability and predictive accuracy.

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