

IDENTIFICATION OF HEART DISEASE USING MACHINE LEARNING

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Heart disease is a significant global health issue, often leading to severe complications if not diagnosed early. This study proposes a machine learning-based system to predict heart disease risk, enabling early detection and timely intervention. The system utilizes key physiological and clinical indicators such as blood pressure, cholesterol levels, heart rate variability, and ECG readings to analyze cardiovascular health patterns. By leveraging ensemble methods like Random Forest, AdaBoost, and Extra Trees, the model effectively captures complex feature relationships, ensuring improved accuracy and robustness over traditional diagnostic approaches. The process involves data preprocessing to clean and structure the dataset, model training to identify heart disease patterns, and prediction to classify individuals into different risk categories. This predictive system allows individuals to take proactive measures to reduce their risk, potentially preventing severe cardiovascular events. Additionally, healthcare providers can utilize these insights to identify high-risk patients, implement targeted treatment strategies, and enhance preventive care. The proposed solution underscores the importance of data-driven approaches in cardiovascular disease management, promoting better health outcomes and early risk detection. With a focus on both individual and institutional benefits, this system serves as a valuable tool for improving heart disease diagnosis and fostering more effective healthcare solutions.

