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(57) Abstract :
A system for predicting heart disease using machine learning is described herein. The system comprises a data collection module (10), a preprocessing module (20), an exploratory data analysis module (30), a machine learning module (40), an optimization module (50), a feature selection and dimensionality reduction module (60), a temporal data analysis and unsupervised learning module (70), a real-world application and validation module (80), a data privacy and security module (90), a future research and innovation module (100), and a practical impact and healthcare improvement module (110). The system enables integrated heart disease prediction within a unified and scalable architecture, providing accurate risk assessment through advanced machine learning techniques, optimized model performance, secure data handling, and clinically supportive decision-making.

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