

(54) Title of the invention : “Heart disease prediction from symptom analysis using machine learning”

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(57) Abstract :

The present invention relates to a method and system for predicting heart disease risk using machine learning techniques applied to patient symptom analysis. The method involves collecting comprehensive patient data, including demographic information, clinical symptoms, medical history, and diagnostic test results, followed by data preprocessing to clean and normalize the data. A machine learning model is then trained on the preprocessed data to identify patterns and correlations between symptoms and heart disease risk. The trained model is used to predict the likelihood of heart disease for individual patients, enabling early detection and personalized treatment planning. The invention further includes feature selection techniques such as recursive feature elimination (RFE) and principal component analysis (PCA) to enhance model accuracy and efficiency. The system integrates various machine learning algorithms, including logistic regression, decision trees, random forests, support vector machines, and neural networks, for robust predictive performance. The model can be integrated with clinical systems for real-time use, offering healthcare professionals a powerful tool for improving diagnostic accuracy and patient outcomes. Additionally, the system ensures data privacy and security by adhering to industry standards and regulations.

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