

Title: Disease Prediction and Drug Recommendation using Machine Learning: A Comprehensive Study

Abstract:

This paper explores the application of machine learning algorithms, including Decision Tree, Logistic Regression, Random Forest, XGBoost, Support Vector Machine, and Naive Bayes, for disease prediction and drug recommendation. Using a diverse dataset, we develop a system that accurately predicts diseases and recommends medications. Experimental results demonstrate the effectiveness of these algorithms in improving healthcare outcomes.

Background:

Machine learning and data analytics advancements have enabled innovative solutions in healthcare. Disease prediction and drug recommendation play vital roles in patient care and healthcare efficiency. Our research aims to automate disease prediction and assist healthcare professionals in making informed decisions using machine learning algorithms.

Problem:

This study addresses challenges in disease prediction, misdiagnosis, and wrong prescription. Accurate prediction is crucial, but misdiagnosis and wrong prescriptions can occur due to various factors. Advanced machine learning techniques are needed to improve accuracy, reduce misdiagnosis, and provide accurate drug recommendations.

Experiment/Dataset:

In order to assess the effectiveness of our proposed system, we employed a comprehensive dataset sourced from Kaggle, consisting of curated medical records.

Disease Dataset

The dataset consists of two CSV files: one for training and one for testing the model. Each file contains 133 columns, where 132 columns represent symptoms and the last column represents the prognosis. The symptoms are mapped to 42 diseases.

Drug Dataset

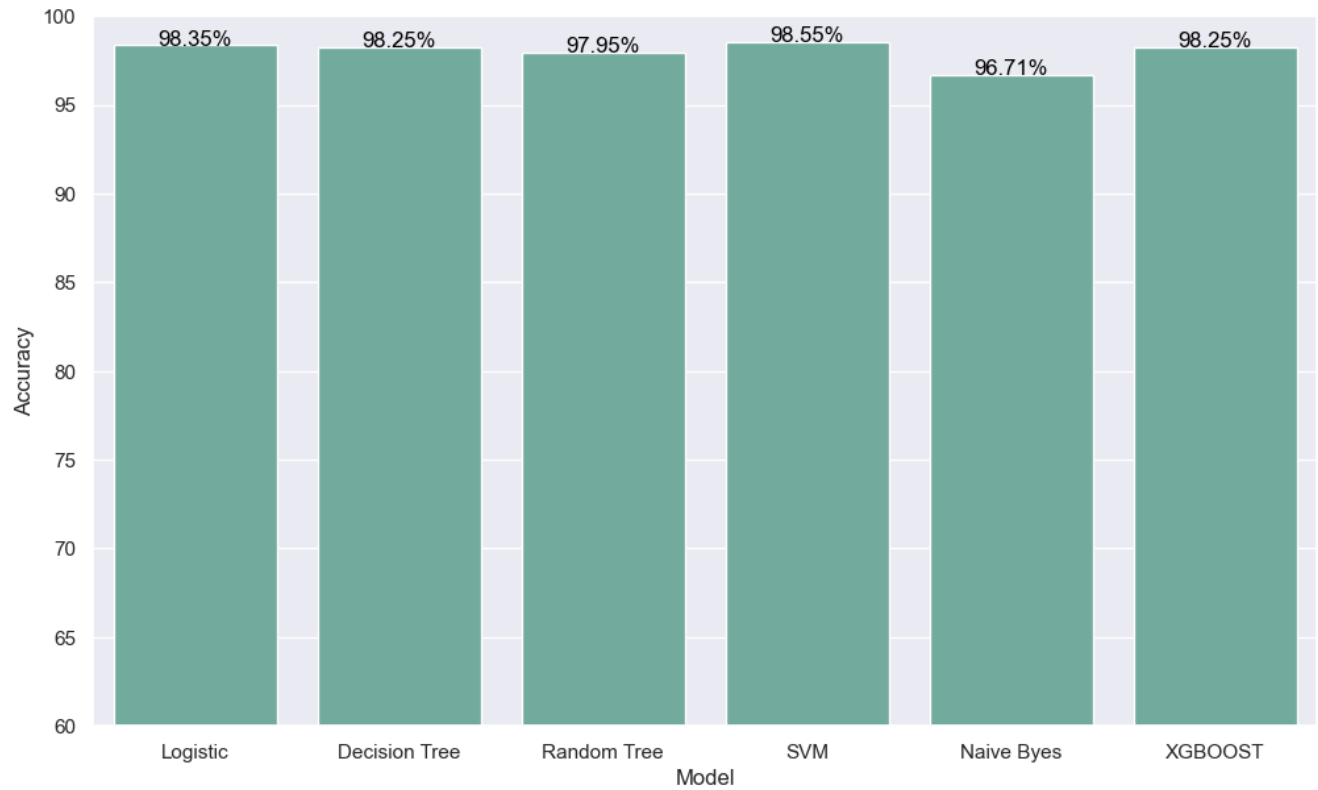
The drugs dataset consists of a single CSV file with 4 columns. Three columns represent age, disease, and gender, while the last column indicates the corresponding drug. A total of 9 diseases are mapped to 4955 drugs in this dataset.

We apply Decision Tree, Logistic Regression, Random Forest, XGBoost, Support Vector Machine, and Naive Bayes algorithms.

Results:

Experimental results demonstrate the effectiveness of the employed machine learning algorithms for disease prediction and drug recommendation. The models achieve high accuracy, precision, recall, and F1-score, indicating their ability to identify diseases accurately.

Results



Recommendation:

Integrating the disease prediction and drug recommendation system in healthcare institutions is recommended. This integration improves diagnoses, reduces errors, and enhances patient outcomes. Future research should explore additional algorithms and address ethical considerations, data privacy, and model interpretability.