MGM's College of Engineering, Nanded.
Department of Computer Science & Engineering

"Diabetes Classification Using Machine Learning"

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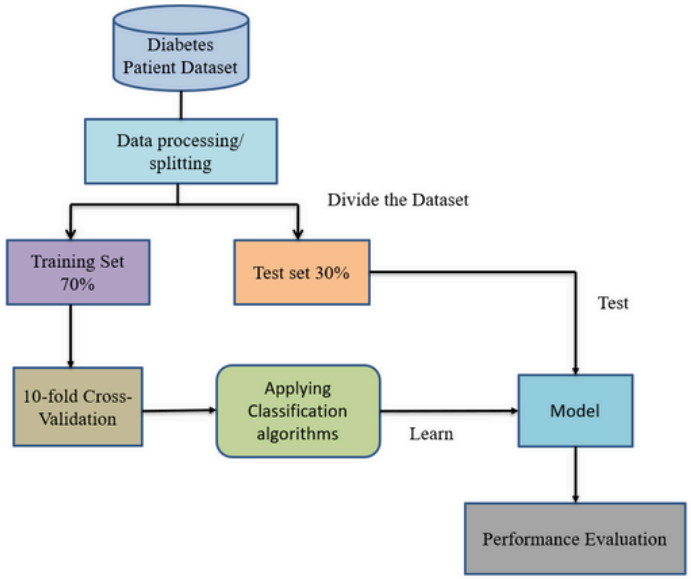
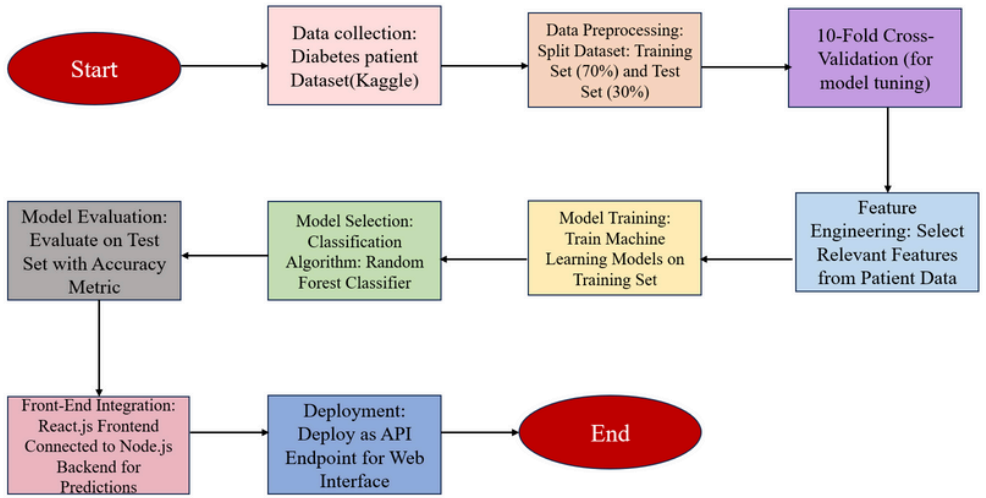
Introduction: Diabetes is a global health issue. affecting millions, requiring early detection for effective management. This project applies machine learning techniques to classify diabetes using patient data, aiming to improve diagnosis accuracy. This project uses machine learning algorithms to classify diabetes based on patient data. We implemented models like Logistic Regression, Decision Trees, and Neural Networks, Support Vector Machine and Random Forest using features such as glucose levels and BMI. The goal is to create a reliable tool for early diagnosis, improving patient care and reducing health risks.

System Architecture:



System architecture for training and testing a model using a diabetes patient dataset. The dataset is divided into a training set (70%) and a test set (30%), with 10-fold cross-validation applied to the training set before applying classification algorithms. The trained model is then evaluated for performance using the test set.

Methodology:



Methodology for a machine learning project involving data collection, preprocessing, 10-fold cross-validation, feature engineering, and model training using a random forest classifier. The trained model is evaluated, integrated with a React.js frontend and Node.js backend, and deployed as an API for web access.

Conclusion: In this diabetes classification project, machine learning, particularly random forest, achieved a 99% accuracy, demonstrating its potential to aid early diabetes diagnosis. While promising, further improvements in model accuracy and generalizability could be pursued with advanced algorithms and refined features to ensure reliable predictions across diverse populations.

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