Submission Summary

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Paper Title
Diabetes Prediction Based on Machine Learning Techniques: A Review

Abstract
Early and precise diabetes diagnosis is vital for effective disease management and complication prevention. With the growing role of machine learning in healthcare, researchers have explored various predictive models to enhance diagnostic precision. This review critically examines decision trees, support vector machines, logistic regression, artificial neural networks (ANNs), and ensemble methods, evaluating their performance based on accuracy, precision, recall, and F1-score. Our analysis indicates that ensemble learning approaches, particularly random forests with gradient boosting, along with ANNs, consistently outperform traditional models, exhibiting superior predictive capabilities. These findings emphasize the potential of machine learning in improving diabetes detection by identifying complex patterns in patient data. Integrating advanced predictive algorithms into diabetes screening can enhance early detection and enable timely medical interventions. With machine learning models continuing to evolve, their application in medical diagnostics holds significant promise for bettering diabetes detection and assisting healthcare professionals in selecting the most effective predictive models for clinical use.

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