MedPredict: A Prototype System for Integrated Machine Learning-Based Disease Prediction

Proceedings - 2025 10th International Conference on Information and Communication Technology for the Muslim World, ICT4M 2025 • Conference Paper • 2025 •
DOI: 10.1109/ICT4M68001.2025.11363546

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Abstract

The rise in chronic and non-communicable diseases (NCDs) such as diabetes, heart disease, kidney conditions, and breast cancer has underscored the need for early diagnosis and preventive strategies. Traditional diagnostic approaches often involve complex procedures and specialist interpretation, delaying timely intervention. This paper presents MedPredict, a prototype of an intelligent, web-based disease prediction system that leverages machine learning to assist in the early detection of multiple health conditions. Developed with an integrated architecture, the prototype includes modules for diabetes, heart disease, breast cancer, and kidney disease, each employing tailored ML algorithms trained on public datasets. Evaluation through functional, integration, and usability testing demonstrated positive outcomes, with prediction accuracies ranging from 76% to 98% and high user satisfaction in terms of interface usability and clarity of results. MedPredict aims to

complement clinical decision-making and support public health efforts by providing an accessible, non-invasive tool for proactive healthcare. © 2025 IEEE.

Author keywords

early diagnosis; early diseases prediction; machine learning-based system; multi-disease system

Indexed keywords

Engineering controlled terms

Cardiology; Decision making; Diagnosis; Diseases; Heart; Learning systems; Machine learning; Public health

Engineering uncontrolled terms

Breast Cancer; Early diagnosis; Early disease; Early disease prediction; Heart disease; Integrated machines; Machine learning-based system; Machine-learning; Multi-disease system; Prototype system

Engineering main heading

Forecasting

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