Abstract

Multiple Disease Prediction Using Novel Artificial Intelligence Techniques †

Neelamadhab Padhy * , **Abhaya Kumar Behera** , **Punam Baral, Shreya Pattanaik, Pradeep Sagar Nayak and Rasmita Sahoo**

Department of Computer Science and Engineering, School of Engineering and Technology, GIET University, Gunupur 765022, Odisha, India; abhayakumarbehera38@gmail.com (A.K.B.); punambara37@gmail.com (P.B.); sreeyapattanaik589@gmail.com (S.P.); pradeepsagarnayak@gmail.com (P.S.N.); sahoorasmita0319@gmail.com (R.S.)
* Correspondence: dr.neelamadhab@giet.edu
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Context: In the healthcare sector, the integration of data mining and machine learning has become increasingly prevalent, offering promising avenues for disease prediction. This article seeks to leverage these technologies to predict multiple diseases by analyzing symptoms, medical history, and lifestyle factors. Recognizing the pivotal role of machine learning in contemporary society, this project was initiated to save lives, promoting healthier lifestyles, and reducing healthcare costs. The significance lies in its ability to forecast diseases before they escalate into serious or permanent conditions.

Material/Method: The methodology encompasses data collection, preprocessing, model selection, training, testing, and deployment. Metrics such as the Precision, Accuracy, Recall, F1 Score, AUC-ROC, Specificity, and Sensitivity are employed for evaluating model performance, complemented by visualization techniques including a Confusion Matrix, Box plot, AUC-ROC curve, and Precision–Recall Curve. The dataset, sourced from diverse repositories including research domains and platforms like Kaggle, undergoes thorough preprocessing to eliminate noise and outliers.

Conclusion: The model demonstrates commendable performance in predicting multiple diseases, striking a balance between accurately identifying individuals with disease and minimizing false positives and negatives. This contributes significantly to informed decision making in healthcare settings. Ultimately, the culmination of this project will result in the development of a model and dashboard interface. Users can input their details and symptoms to ascertain whether they are afflicted by any chronic diseases, facilitating prompt diagnoses and treatment recommendations.

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