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MULTI-DISEASE DETECTION WITH NEURAL NETWORK FUSION

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ABSTRACT

In this study, we address the challenge of analyzing imbalanced medical data for accurate disease prediction. Specifically, we focus on developing a supervised model that utilizes machine learning and deep learning techniques to detect multiple diseases. In our approach, we focus on chronic kidney disease, malaria, and pneumonia as the specific diseases of interest. Chronic kidney disease is marked by a gradual decline in kidney function, leading to the accumulation of waste products in the blood and the onset of related health complications. On the other hand, malaria is a severe illness caused by Plasmodium parasites, which are transmitted through mosquito bites and can pose a significant threat to human life. Pneumonia, on the other hand, is an infection that inflames the air sacs in the lungs, often resulting in fever, fluid accumulation, and breathing difficulties. To facilitate rapid detection by lab assistants, our model leverages accurate disease prediction based on provided data. We fine-tune the neural network for chronic kidney disease prediction, while adopting convolutional neural networks (CNNs) for analyzing parasite-infected cells and chest X-rays in malaria and pneumonia detection, respectively. Additionally, we outline the potential expansion of this project to include other diseases in the future.

KEYWORDS: Multi-disease detection, image classification, Deep Learning, Artificial Neural Network, Convolution neural networks.

1. INTRODUCTION

Nowadays, most health system analysis models focus on analyzing individual diseases, lacking a unified system for disease detection. Consequently, health systems must train lab assistants to manually review patient reports and provide results. To address this issue, we propose a Flask API-based system capable of predicting multiple diseases. By analyzing and validating vast, intricate, and condensed data, this system facilitates knowledge extraction for informed decision-making. Lab assistants can effortlessly upload values and receive detection results, enhancing simplicity and accuracy across various hospitals.

This research will categorize the disease into infected and uninfected by identifying noteworthy patterns, recognising connections and linkages among several factors included in a vast dataset. It will be demonstrated as a significant source of precision and quick outcomes in the medical field. For even greater accuracy, the database will be automatically updated with any new data that is accurately anticipated. Using printing results as opposed to only providing results on the online site will help this project much further.

The diagnostic process typically involves the performance of one or more diagnostic procedures, which may include medical tests. It is crucial to accurately diagnose chronic illnesses due to the dependence on numerous variables that play a role in the diagnostic determination. It is a challenging technique

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