Dengue diagnosis using K-Nearest Neighbors (KNN) and Artificial Neural Networks (ANN)

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ABSTRACT

Dengue fever continues to be a significant global health challenge, and accurate diagnostic methods are crucial for timely treatment. In this study, we explored the performance of two machine learning algorithms—K-Nearest Neighbors (KNN) and Artificial Neural Networks (ANN)—to classify and diagnose dengue cases. The aim was to compare their accuracy and identify a method that delivers better results.

The KNN algorithm achieved an accuracy of 50%, while the ANN model showed a slight improvement with an accuracy of 55%. To enhance the performance of the ANN model, we experimented with various combinations of loss functions and optimizers. The best results were observed with the use of the Mean Squared Error (MSE) as the loss function and Adaptive Moment Estimation (ADAM) as the optimizer. This combination yielded 55% accuracy, with a precision of 54% and a recall of 82%. The higher recall indicates the model's ability to identify most positive cases, making it a reliable approach for sensitive dengue detection scenarios.
Despite modest accuracy, the research highlights the potential of machine learning in healthcare applications. Further optimization and feature engineering can significantly improve the models' performance. This study provides a foundation for future work in improving the accuracy of diagnostic tools for dengue.

KEYWORDS: Dengue fever diagnosis, Machine learning algorithms, K-Nearest Neighbors (KNN), Artificial Neural Networks (ANN), Classification accuracy, Mean Squared Error (MSE), Adaptive Moment Estimation (ADAM), Recall and precision, Diagnostic tools in healthcare

1.INTRODUCTION:

Dengue fever, a mosquito-borne viral disease, has become a major public health concern in tropical and subtropical regions. Its rapid spread and severity pose challenges in early diagnosis and treatment. Accurate and timely diagnosis is essential to managing and controlling the disease effectively. Traditional diagnostic methods rely heavily on clinical expertise and laboratory tests, which can be time-consuming and resource-intensive. In such scenarios, technology-driven solutions like machine learning can play a pivotal role in transforming healthcare diagnostics.
Machine learning algorithms are designed to analyze patterns and relationships in data, enabling automated decision-making with high precision. In recent years, these algorithms have shown promise in the field of medical diagnostics, particularly for infectious diseases. Among the various machine learning approaches, K-Nearest Neighbors (KNN) and Artificial Neural Networks (ANN) stand out for their simplicity and adaptability. These algorithms have the potential to analyze

English Handwritten Alphabet Recognition Using Artificial Neural Networks

ABSTRACT

This research presents an efficient approach for recognizing English handwritten alphabets using Artificial Neural Networks (ANNs). The study focuses on developing a robust model capable of identifying both uppercase and lowercase letters with high accuracy. Researchers explore various neural network architectures and hyperparameter combinations to optimize recognition performance. The system employs image preprocessing techniques, feature extraction, and a carefully designed neural network to achieve reliable character recognition. Experimental results demonstrate that the proposed approach achieves promising accuracy rates, making it suitable for real-world applications in document digitization, educational tools, and human-computer interaction systems.

KEYWORDS

Handwritten Character Recognition; Artificial Neural Networks; HOG Features; Data Augmentation; Image Preprocessing; Feature Extraction; Computer Vision; Pattern Recognition

1. INTRODUCTION

Handwritten character recognition remains a challenging problem in the field of pattern recognition and machine learning due to the significant variability in handwriting styles, orientations, sizes, and quality of writing. Despite impressive advances in optical character recognition (OCR) systems, handwritten character recognition continues to present unique challenges that require specialized approaches.[1]

Handwritten English alphabet recognition has numerous practical applications, including:

I. Digitization of handwritten documents and historical manuscripts

II. Form processing in administrative and business settings

III. Postal mail sorting systems

IV. Educational tools for teaching handwriting

V. Authentication systems based on handwriting analysis

VI. Assistive technologies for individuals with disabilities

The recognition of handwritten characters involves several steps: image acquisition, preprocessing, feature extraction, and classification. Traditional approaches to this problem have utilized template matching, structural analysis, and statistical methods. However, with the advancement of computational power and neural network algorithms, deep learning approaches have demonstrated superior performance in pattern recognition tasks, including handwritten character recognition.

Design and Development of an Intelligent Wardrobe System for Personalized Outfit Selection

SmartStyler

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Abstract:

Nowadays, selecting appropriate outfits for each day can be difficult, tedious, time-consuming and challenging task. To overcome this issue an AI powered expert system needs to be developed which works on Artificial Intelligence technology so called AI-powered Smart Wardrobe System that functions as a personal stylist. In this research work a web based system Smart Wardrobe System leverages advanced computer vision techniques to analyze clothing items, identify exact fabrics, detect colors and determine the user's skin tone. On the basis of theses parameters the system will take all collection of clothes of any individual and suggest them the appropriate outfit that the person has not used frequently just before.

Keywords- Smart Wardrobe, Image Processing, Recommendation System, Closet Management, Fashion AI.

1. Introduction

1.1 Introduction

Most people in modern society have a sufficiently prosperous economic status, allowing them to acquire more clothes, footwear, and other items than they actually need.

As a result, closet management has become a burden for fashion-conscious individuals who frequently rush in this highly competitive environment. The majority of people typically organize their wardrobes manually, often ending up wearing the same clothes repeatedly while much of their clothing remains unused.

Title:
"Predictive Modelling of Malaria Cases Based on Testing and Prevention Measures (2020-2025)"

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ABSTRACT:

This study presents a comprehensive predictive modeling approach to estimate malaria case trends from 2020 to 2025, leveraging data on diagnostic testing and preventive interventions. Malaria remains a significant public health challenge in many regions, and accurate forecasting is essential for resource allocation, policy planning, and timely response. By integrating epidemiological data with information on rapid diagnostic tests (RDTs), insecticide-treated net (ITN) distribution, indoor residual spraying (IRS), and antimalarial drug coverage, the study develops machine learning and time-series models to analyze patterns and predict future case incidence. Key variables considered include regional testing rates, population coverage of prevention measures, climatic conditions, and healthcare access indicators. The models were trained on historical datasets spanning multiple high-burden countries and validated using cross-year performance metrics to ensure robustness. Results indicate a strong correlation between intensified prevention strategies and a projected decline in malaria incidence, particularly in areas with sustained intervention efforts. This research underscores the importance of data-driven decision-making in malaria control and highlights the potential of predictive analytics to support global health initiatives in achieving malaria elimination targets.

KEYWORDS: Malaria prevention, Data analysis, public health, Malaria treatment, Health issues.

INTRODUCTION:

This research aims to develop and evaluate predictive models of malaria incidence from 2020 to 2025, using a combination of epidemiological, environmental, and intervention-related data. Specifically, it explores the impact of testing coverage and preventive measures on malaria trends, with the goal of understanding how these factors influence disease dynamics over time. The study employs a range of statistical and machine learning techniques to build robust models capable of forecasting future malaria cases with high accuracy.

The findings of this research have significant implications for national malaria control programs, international health organizations, and policy-makers. By providing a data-driven framework for anticipating malaria burdens, the study supports strategic decision-making and contributes to global efforts toward malaria elimination. As the world moves closer to the 2030 targets set by the WHO Global Technical Strategy for Malaria, predictive modeling will play an increasingly vital role in ensuring progress is both measurable and sustainable.