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Fitness Tracker with AI Nutritionist

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INTRODUCTION

Maintaining a healthy lifestyle is challenging, with traditional fitness and nutrition tracking often lacking personalization. The "Fitness Tracker with AI Nutritionist" addresses this by combining AI and IoT in a web app, delivering personalized meal recommendations and real-time fitness tracking through smartwatch data. By uniting tailored nutrition insights with activity monitoring, this project fosters a holistic approach to health, offering adaptive recommendations that support lasting, healthy habits.

METHODS

Our methodology employs machine learning to deliver a personalized health management system. Smartwatch sensors capture real-time fitness data like steps and heart rate, while vector embedding and K-Nearest Neighbors (KNN) algorithms match users' profiles to customized meal recommendations based on dietary preferences, BMI, and goals. User data flows from inputs and fitness metrics into machine learning models on a Flask backend, producing adaptive recommendations displayed through an intuitive web interface.

This setup ensures dynamic fitness and nutrition insights that evolve with users' needs, offering an accessible, comprehensive wellness solution.
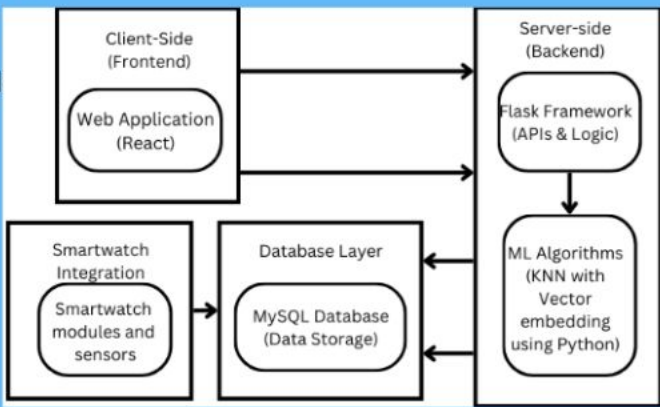
FINDINGS AND RESULTS

Preliminary testing of the "Fitness Tracker with AI Nutritionist" shows its effectiveness in delivering personalized meal recommendations and fitness tracking through KNN and vector embeddings, aligning with users' health data and goals. The web app integrates IoT smartwatch data for real-time insights on metrics like steps and heart rate, boosting user engagement and motivation. Early feedback highlights strong usability and a positive impact on users' ability to monitor and achieve their health goals, indicating the app's potential as a valuable tool for holistic wellness management.

CONCLUSIONS

We are developing the Fitness Tracker with AI Nutritionist, an IoT-integrated web application aimed at transforming health and fitness management. Our research has identified the tools and algorithms needed for personalized meal recommendations and real-time fitness tracking. While in the early stages, we have a clear roadmap to overcome traditional fitness app limitations and deliver a more adaptive, data-driven solution. Next, we will implement the architecture and use machine learning techniques like vector embeddings and KNN for a seamless user experience.

DATA ANALYSIS

For data analysis, we preprocess user inputs and smartwatch metrics for consistency and reliability. We then create vector embeddings for user profiles and food items to facilitate accurate recommendations. The K-Nearest Neighbors (KNN) algorithm identifies the closest matches in the database, suggesting the most suitable meal plans for each user. Visualization tools present this data in accessible formats, helping users track trends and engage with their wellness journey.

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