

Personalized Fitness Guide Using Machine Learning Research Paper

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Abstract - This paper presents a web-based Personalized Fitness Guide developed using Flask and Machine Learning. The system predicts daily calorie requirements, estimates calories burned during activities, analyzes nutritional information, and generates personalized workout plans based on user characteristics. The application integrates multiple fitness modules into a single platform to support healthier lifestyle decisions.

Keywords- Machine Learning, Flask, Fitness, Calories, Nutrition, Workout Planning

Introduction

Maintaining a healthy lifestyle requires proper nutrition and regular exercise. The proposed system provides personalized recommendations by analyzing user information and generating customized fitness guidance.

Problem Statement

Existing fitness applications often provide generic recommendations that do not consider individual user characteristics.

Objectives

Develop a personalized fitness platform, predict calorie needs, estimate calories burned, analyze nutrition, and generate customized workout plans.

Existing System

Traditional fitness apps offer separate tools and limited personalization.

Proposed System

The proposed system integrates calorie prediction, calorie burn estimation, nutrition analysis, and workout planning using machine learning.

Methodology

User data is collected through web forms. Trained ML models process inputs and generate predictions. Flask connects the frontend with backend models.

Implementation

Implemented using Python, Flask, HTML, CSS, JavaScript, pandas, scikit-learn, and joblib. Modules include calorie prediction, calorie burn calculator, nutrition analysis, and workout planner.

Experimental Results

Testing with multiple user profiles showed fast response times, reliable predictions, and smooth navigation across all modules.

Performance Evaluation

The application demonstrated excellent usability, stable execution, and personalized recommendation quality.

Advantages

Personalized recommendations, integrated modules, user-friendly interface, fast predictions, scalable architecture.

Applications

Personal fitness, gyms, healthcare, sports training, educational institutions, wellness programs.

Future Scope

Integration with wearable devices, mobile apps, cloud deployment, sleep tracking, hydration monitoring, and advanced AI models.

Conclusion

The Personalized Fitness Guide successfully combines machine learning and web technologies to provide intelligent, personalized fitness recommendations and promote healthier lifestyles.

References

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