Fitness Level Prediction Project Report

# 1. Introduction

This project is a Machine Learning based Fitness Level Prediction system with an interactive web interface. The system predicts a user's fitness level based on inputs like Age, BMI, Daily Steps, Sleep Hours, Stress Level, and Hydration Level. The predicted fitness levels are categorized as Fit, Average, or Unfit. The system also provides tips for improvement based on the predicted result.

# 2. Dataset Description

The dataset used includes participant information and health-related parameters. The features used for prediction are:  
• Age  
• BMI  
• Daily Steps  
• Hours of Sleep  
• Stress Level (1-10)  
• Hydration Level (1-10)

# 3. Machine Learning Model

The model used for prediction is the K-Nearest Neighbors (KNN) classifier. The input features were scaled using StandardScaler and the model achieved an accuracy of 71.3%.

# 4. Web Application

A Flask-based web application was developed where users can input their fitness parameters. The backend processes the input and returns the predicted fitness level along with personalized suggestions. Form validation and error handling are implemented for better user experience.

# 5. Key Features

• Clean, aesthetic and centered UI  
• Input validation to avoid unrealistic values  
• Clear Form button to reset inputs  
• Informative popup message with fitness prediction and tips

# 6. Future Improvements

• Improve model accuracy by trying advanced ML models.  
• Add graphical visualizations dynamically.  
• Implement user authentication and history tracking.  
• Include additional features like heart rate, blood pressure, etc.