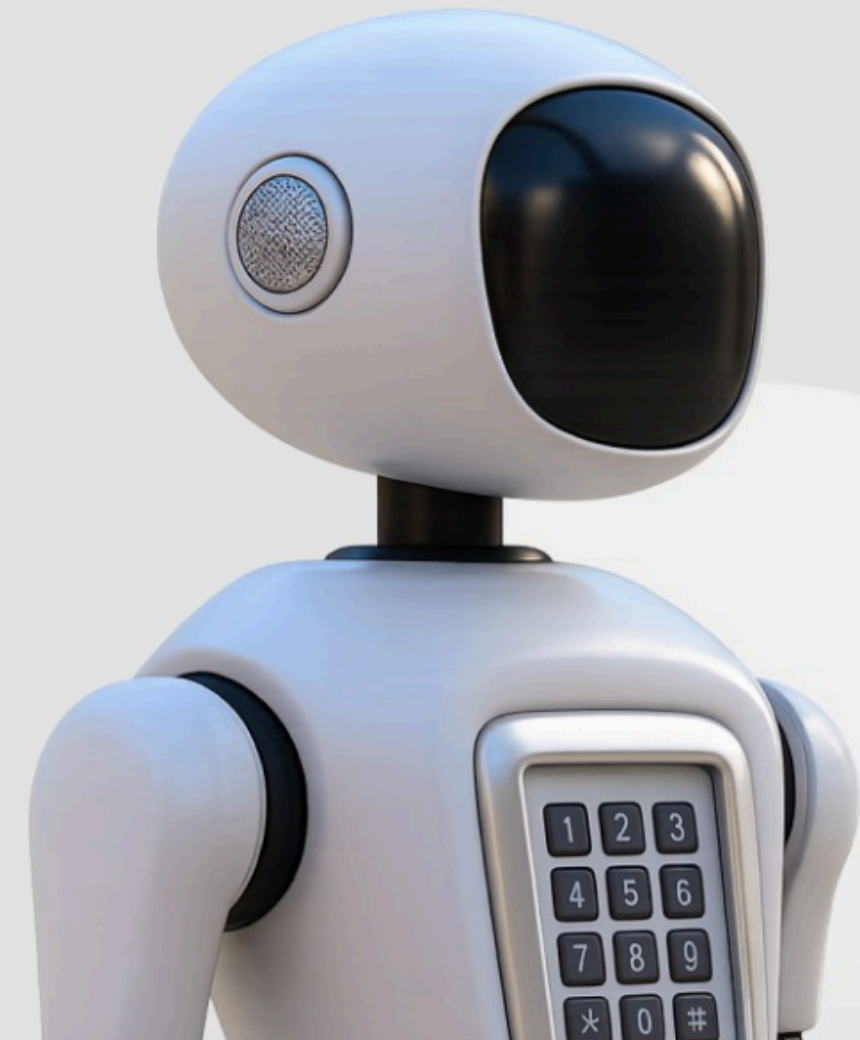# Wellbot Globall Wellnes Assitant Chatbot

An AI-powered fitness chatbot revolutionizes health by providing personalized coaching through data-driven workout and nutrition recommendations, automated progress tracking, real-time feedback, and motivational support

by Akash Rawat

Python Machine Learning Project

Contents

Modules

Project Overview

AI-Powered Fitness Revolution

Our intelligent chatbot transforms fitness tracking by combining machine learning with personalized coaching. It analyzes user data to provide tailored workout plans, nutrition advice, and motivation tracking for optimal health outcomes.
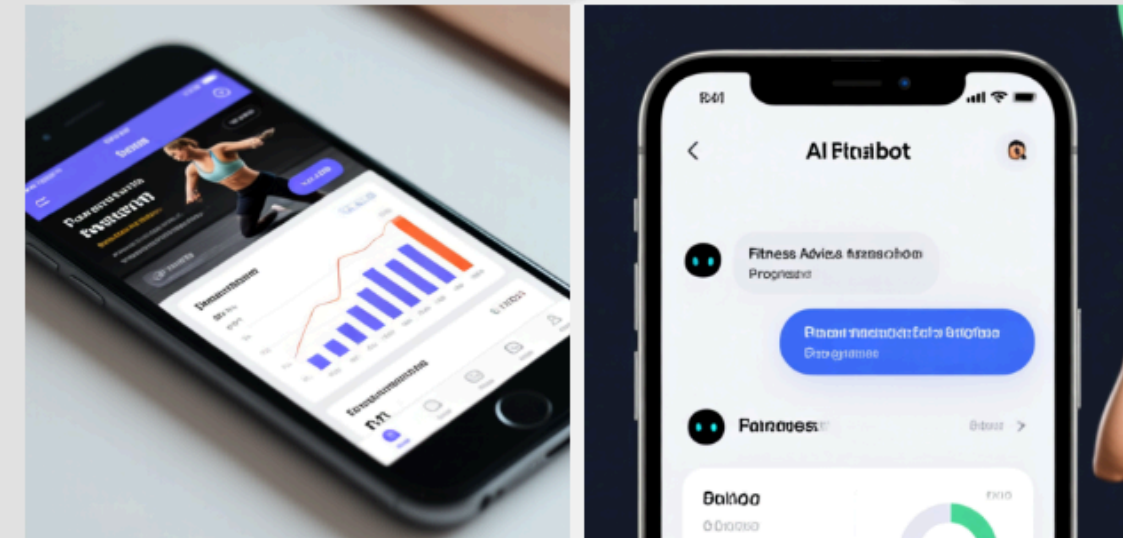
Data-Driven Insights

Real-time analysis of fitness metrics including BMI, steps, sleep, and nutrition for personalized recommendations

Conversational AI

Natural language interface providing 24/7 fitness coaching and motivation through intelligent dialogue

Project Objectives

Personalization Engine

Create individualized fitness plans based on user data, preferences, and health goals using advanced ML algorithms

Motivation Tracking

Monitor user engagement and provide motivational feedback to maintain consistency and achieve long-term fitness goals

Real-time Analysis

Process user queries instantly and provide immediate feedback on fitness progress, workout effectiveness, and health status

Health Insights

Generate actionable health recommendations by analyzing patterns in fitness data, sleep, nutrition, and lifestyle factors

Dataset Creation

Realistic Fitness Data Generation

Comprehensive 5000×30 dataset created using Python with realistic fitness attributes to simulate real-world user health data

Demographics

Age, weight, height, gender for BMI calculations

Activity Metrics

Daily steps, workout duration, exercise intensity

Health Indicators

Heart rate, sleep hours, stress levels, BMI

Dataset Challenges & Features

15%
Missing Values

8%
Duplicates

12%
Outliers

5%
Typos

Nutrition Data

Protein intake, water consumption, calorie tracking for dietary analysis

- Daily protein grams
- Water intake in liters
- Caloric consumption patterns

Lifestyle Factors

Sleep quality, stress management, recovery metrics for holistic health

- Sleep duration tracking
- Stress level indicators
- Recovery time analysis

Data Preprocessing Pipeline

Remove Duplicates

Eliminate redundant entries and irrelevant data columns to ensure dataset integrity

Fix Typos & Formatting

Standardize text entries, correct spelling errors, and normalize data formats

Handle Missing Values

Apply median/mode imputation for numerical and categorical features respectively
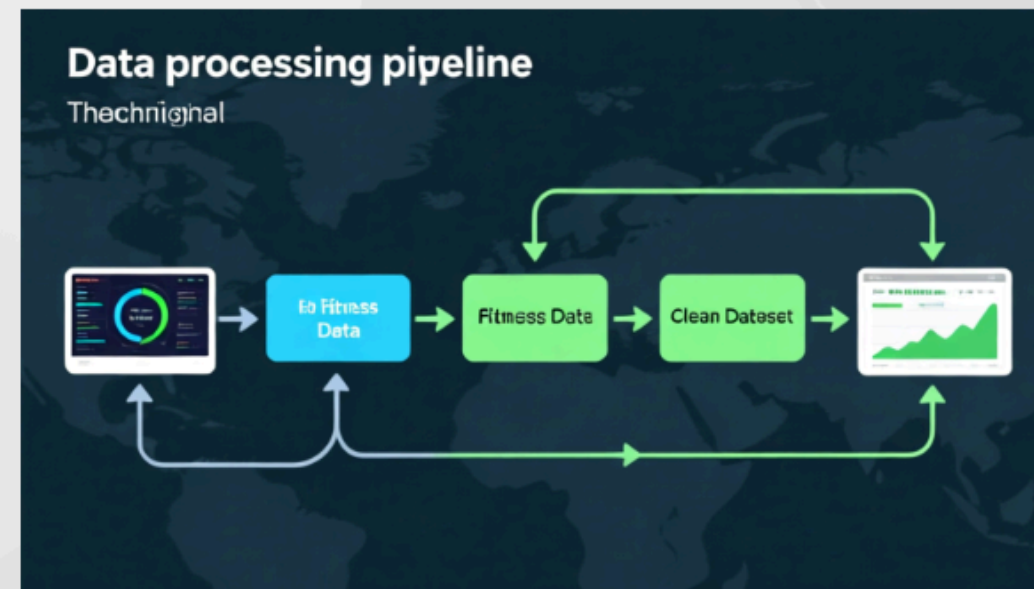
Outlier Treatment

Use winsorization technique to cap extreme values at 95th percentile

Recalculate BMI

Verify and recalculate BMI using standardized formula: weight(kg)/height(m)²

Preprocessing Flow Diagram

Data processing pipeline
Thechniginal

Raw Data

Import 5000×30 fitness dataset with realistic noise and inconsistencies
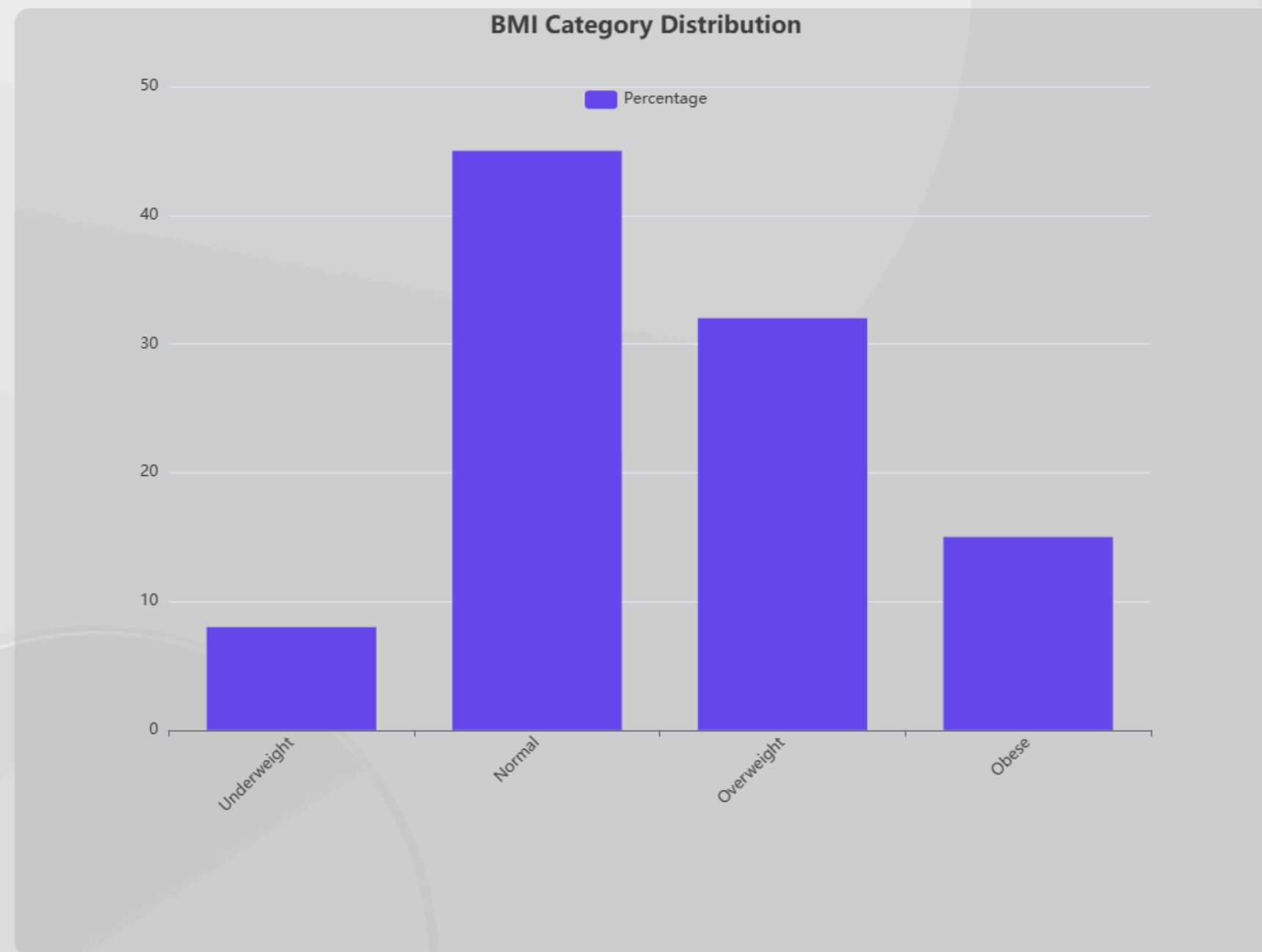
Clean & Transform

Apply comprehensive cleaning pipeline with validation checks

Quality Dataset

Generate analysis-ready dataset for ML model training

Exploratory Data Analysis

BMI Category Distribution

Missing Values

Visualized using missingno matrix and seaborn heatmaps for pattern identification

Key Metrics

Steps >10K, sleep >7hrs, and protein intake distributions analyzed

Key Insights from Analysis

45%
Fit People (BMI<25)

65%
>10K Steps Daily

58%
>7 Hours Sleep

45
Avg Workout (min)

Health Metrics

Average heart rate: 72 bpm, Water intake: 2.4L daily

- Optimal heart rate zones identified
- Hydration patterns analyzed
- Recovery metrics tracked

Lifestyle Trends

Strong correlation between sleep and workout consistency

- Active users sleep 45min more
- Higher protein = better recovery
- Steps predict overall fitness

Chatbot Module Architecture

AI FITNESS TRACKING

Intelligent Query Processing

Natural language understanding to interpret user fitness questions and provide contextual responses based on their personal data history
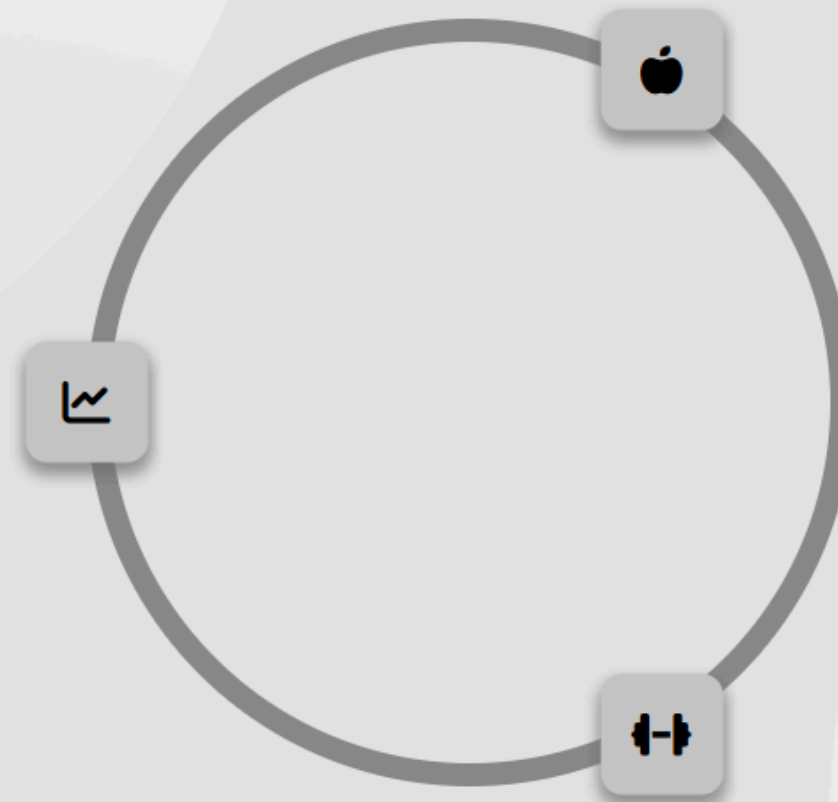
Personalized Recommendations

Dynamic workout and diet plan suggestions tailored to individual goals, preferences, and current fitness level using ML algorithms

Chatbot Capabilities

Progress Tracking

Monitor daily fitness metrics, workout completion rates, and goal achievement with visual progress indicators and milestone celebrations

Nutrition Planning

Generate personalized meal plans based on dietary preferences, calorie targets, and nutritional requirements with grocery lists

Workout Optimization

Suggest exercise modifications, intensity adjustments, and recovery recommendations based on performance data and user feedback

Technical Implementation

Python Technology

Comprehensive ML pipeline using pandas, scikit-learn, and natural language processing libraries

NLP Engine

- spaCy for intent recognition
- Transformers for context understanding
- Custom fitness domain training

ML Models

- Random Forest for predictions
- K-means for user clustering
- Linear regression for trends

Data Storage

SQLite for user profiles and fitness history

Visualization

Matplotlib and Seaborn for EDA charts

Deployment

Flask web interface with mobile responsiveness

Thank You