**README – Personalized Diet Recommendation System**

**1. Overview**

This project implements a **Personalized Diet Recommendation System** using **XGBoost**.  
It predicts the **best meal plan** for an individual based on their **health, lifestyle, and nutritional data**.

**2. Project Structure**

project/

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├── data/

│ ├── train.csv

│ ├── test.csv

│

├── models/

│ └── diet\_recommendation\_pipeline.pkl

│

├── docs/

│ ├── README.md

│ └── report.pdf

│

├── output/

│ ├── predictions.csv

│ ├── metrics.json

│

├── requirements.txt

└── main.py

**3. Setup**

**Install dependencies:**

pip install -r requirements.txt

Requirements file includes:

pandas==2.0.0

numpy==1.24.0

scikit-learn==1.2.0

xgboost==1.7.0

joblib==1.2.0

**4. Usage**

**Training the model:**

python main.py –train

**Making predictions:**

from predictor import predict\_new

patient\_data = {

'Age': 30,

'Gender': 'Male',

'Height\_cm': 175,

'Weight\_kg': 70,

'BMI': 22.86,

'Chronic\_Disease': 'None',

'Daily\_Steps': 8000,

'Preferred\_Cuisine': 'Indian',

# Add remaining fields...

}

result = predict\_new(patient\_data)

print("Top Recommended Meal Plan:", result)

**5. Dataset**

**Features include:**

* Demographics (Age, Gender, Height, Weight, BMI)
* Medical details (Chronic Diseases, Blood Pressure, Cholesterol, Blood Sugar)
* Lifestyle habits (Steps, Exercise Frequency, Sleep Hours, Alcohol & Smoking habits)
* Nutrition intake (Calories, Protein, Carbs, Fats)
* Food preferences & allergies

**Target:** Recommended\_Meal\_Plan (multi-class label)

**6. Model**

* **Algorithm:** XGBoost (multi-class classification)
* **Evaluation Metrics:**
  + Accuracy
  + Mean Average Precision (mAP)
* **Validation Results (Example run):**
  + Accuracy: ~87.4%
  + mAP: ~88.5%

**7. Deliverables**

* Trained model (.pkl)
* Preprocessing pipeline (encoders, column order)
* Sample predictions
* Metrics log
* Full project report (report.pdf)