NUTRIVALUE

In the Partial Fulfilment of the requirements of the 23PCCE501L
Artificial Learning and Machine Learning Laboratory
TY B. Tech – Semester I (2025–26)
Computer Engineering,TY,Div-B

Submitted By :

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PROBLEM STATEMENT

- Manual calorie tracking is time-consuming
- Users are unaware of nutritional breakdown
- Hard to track daily/weekly diet trends
- problem is not that people don’t want to track calories…the real problem is that the process is difficult.

Goal : Make calorie tracking automatic, accurate, and engaging.

PROJECT OVERVIEW

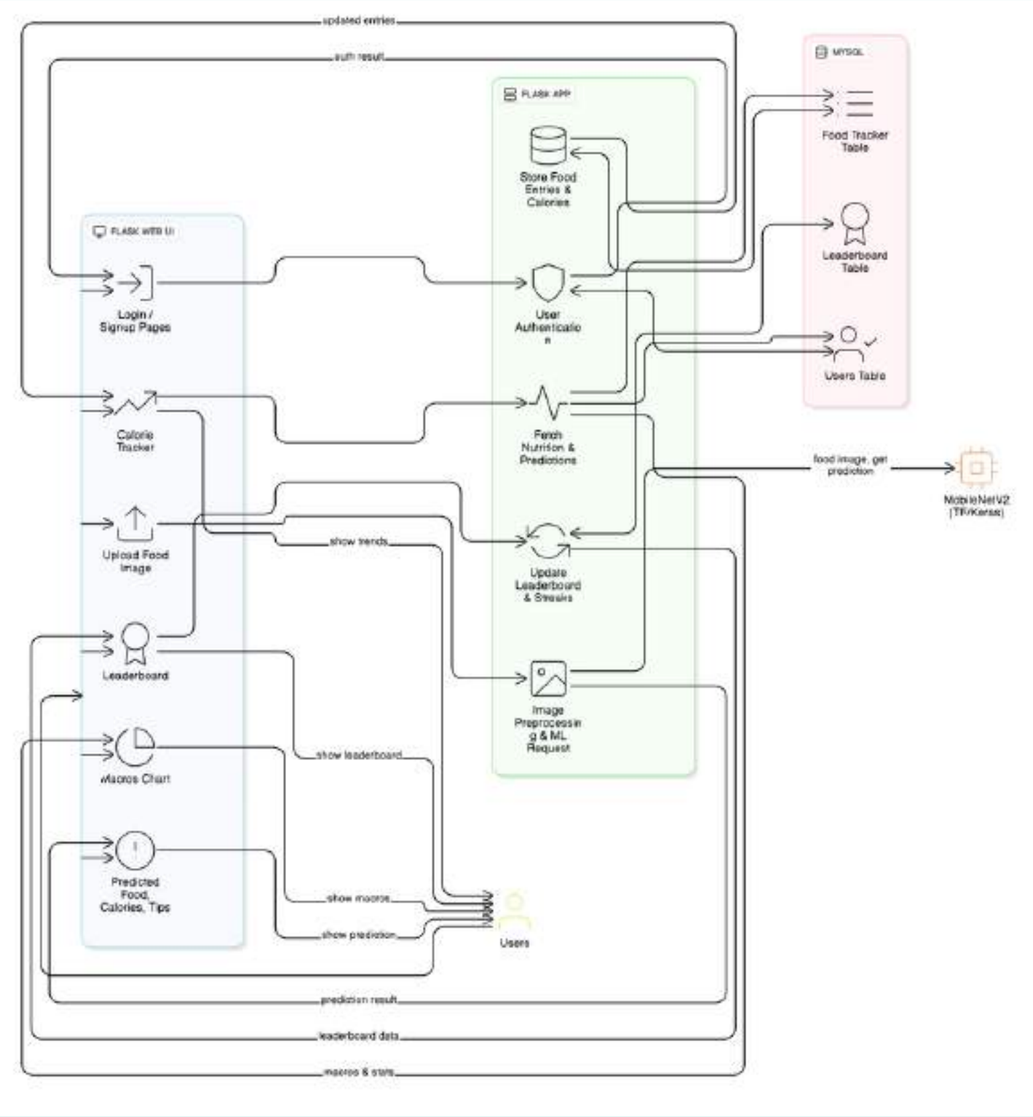
NutriValue is an AI-powered web application that :

- Predicts food items from uploaded images
- Estimates calorie & nutrition values
- Tracks daily & weekly intake
- Provides health tips and leaderboard motivation
- Combines Deep Learning + Flask Web App + MySQL Database

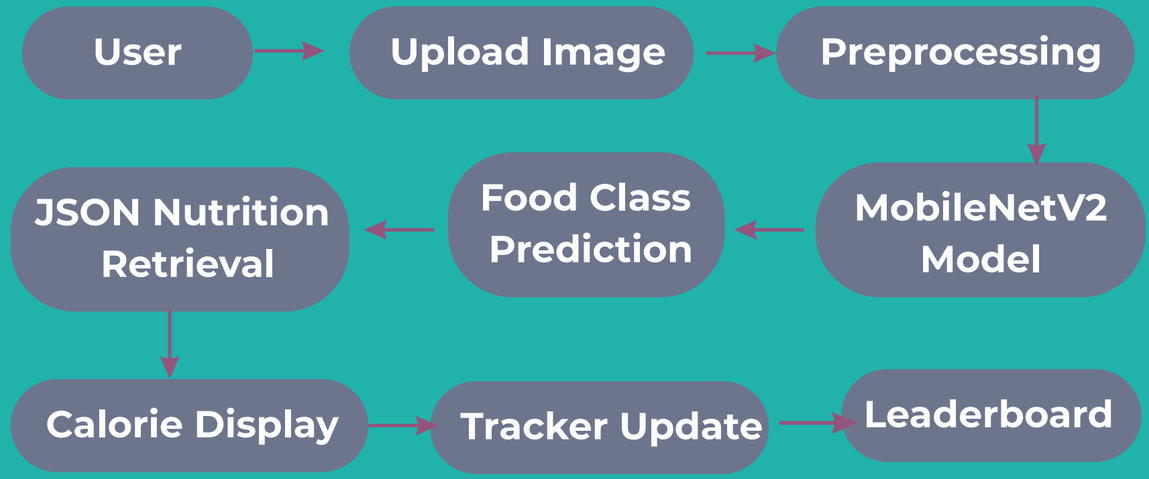
OBJECTIVES

- Predict food class from an image using CNN (MobileNetV2).
- Estimate calories and macros (protein, carbs, fats).
- Track user’s daily and weekly calorie intake.
- Provide personalized health tips.
- Add gamification through leaderboards & streaks.

SYSTEM ARCHITECTURE



FLOW



COMPONENTS

- Frontend (HTML/CSS/JS)
- Backend (Flask)
- ML Model (TensorFlow/Keras)
- Database (MySQL)

METHODOLOGY

1. ***Data Preparation***
   - Food images categorized by class
   - 80% Training, 20% Testing split
   - Data augmentation for variation
2. ***Model Development***
   - Transfer Learning: MobileNetV2
   - Added GAP, Dense, Dropout layers
   - Softmax output for 16 food items
   - Loss: Categorical Cross-Entropy
   - Optimizer: Adam
3. ***Prediction Pipeline***
   - Image preprocessing
   - Class prediction & confidence score
   - Fetch nutrition from JSON
   - Display calories, macros & tips

KEY FEATURES

1. Food Image Classification

- Deep CNN (MobileNetV2)
- High accuracy
- Softmax prediction of food class

2. Nutrition Estimation

- Fetches calories, protein, carbs, fat
- Food-specific health tips

3. Calorie Tracker

- Daily log of all meals
- Weekly graph visualization
- Historical tracking

4. Leaderboard System

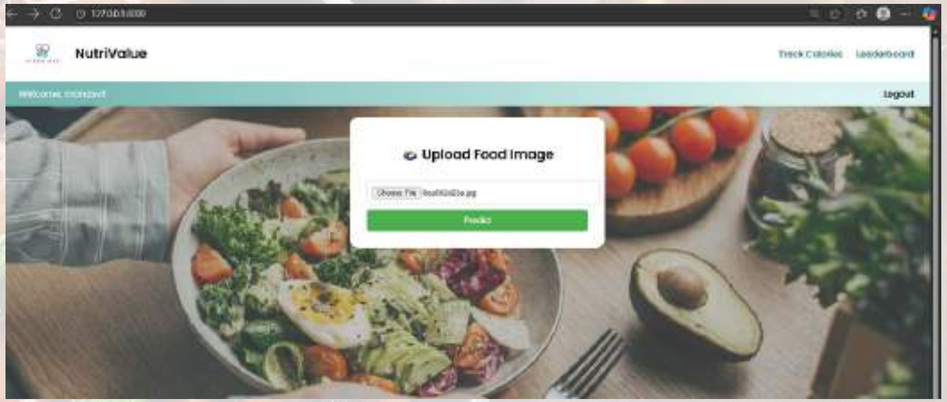
- User ranking
- Streak tracking
- Motivation-based gamification

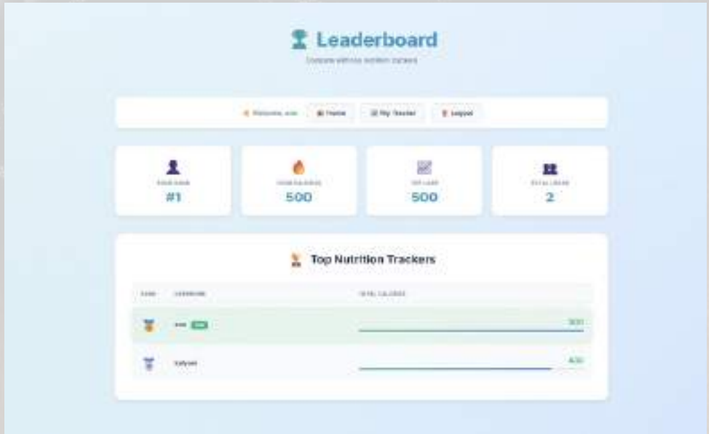
DATABASE DESIGN

1. users Table
   - user_id (PK)
   - username
   - email
   - password (hashed)
   - created_at
2. food_tracker Table
   - entry_id (PK)
   - user_id (FK)
   - food_name
   - calories, protein, carbs, fat
   - date, time
3. leaderboard Table
   - user_id (FK)
   - username
   - streak
   - total_calories

Database supports login, tracking, analytics & gamification.

RESULTS & SCREENS





CONCLUSION

- NutriValue successfully integrates deep learning with web technology
- Provides real-time calorie estimation and nutrition awareness
- Helps users monitor diet effectively through tracking & leaderboards

FUTURE ENHANCEMENTS

- Portion size estimation
- Support for multi-food images (thalis)
- Mobile app version
- Personalized diet recommendations

REFERENCES :

[1] TensorFlow, “TensorFlow Deep Learning Framework Documentation.” Link

[2] Keras, “Keras API Reference — MobileNetV2 and ImageDataGenerator.” Link

[3] Flask, “Flask Web Framework Documentation.” Link

[4] MySQL, “MySQL Reference Manual.” Link

THANK YOU