Fruit & Vegetable Identification System using AI

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1. Goal of the Project

Objective

The objective of this project is to design and develop an Artificial Intelligence based system that can automatically identify fruits and vegetables from images. This project is jointly developed by Vishal Kumar and Gopal Dixit to deliver a simple, accurate, and efficient solution for image-based identification.

Problem Statement

Manual identification of fruits and vegetables is often time-consuming and prone to errors, especially when different items look similar. This creates confusion and inefficiency, highlighting the need for an automated and reliable identification system.

Proposed Solution

The proposed solution is an AI-powered image recognition system. Users upload an image, which is processed using Machine Learning and Computer Vision techniques to accurately identify the fruit or vegetable.

Expected Outcome

The system is expected to provide accurate results with minimal user effort, reduce manual work, and support applications in education, agriculture, and retail sectors.

2. Design Patterns Used

Model–View–Controller (MVC)

The MVC architecture is used to ensure a clean separation between data handling, user interface, and application logic. This improves scalability and maintainability.

AI Processing Pipeline

The AI pipeline includes image upload, preprocessing, feature extraction, classification, and result display in a structured manner.

3. Technology Used

Frontend: HTML, CSS, and React
Backend: Flask or FastAPI
AI Model: Convolutional Neural Network (CNN)
Database: PostgreSQL or MongoDB
Tools: Python, GitHub, Postman

4. Database Schema Description

Users: Stores user details such as name and email.
Images: Stores uploaded images and timestamps.
Predictions: Stores identified fruit or vegetable details.