Empowering the Youth; Empowering the Nation

Project Title

Second Year Project Synopsis
Submitted by

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Project Overview

Project Title: The Food Grade

Project Aim: An application that aims to verify the legitimate markings of manufacturing and expiration dates on packaged food items before they are dispatched. This project seeks to address concerns about food safety, fraudulent labeling, and the lack of transparency in the food supply chain. The application will utilize advanced technologies to enhance consumer trust and regulatory compliance by detecting discrepancies in food packaging labels before they reach the market. By integrating AI and database verification, The Food Grade ensures that all packaged food items meet safety standards, thereby reducing the risk of expired or tampered products being sold.

Problem Statement

Define the Problem Clearly The absence of a reliable and automated mechanism to verify the legitimacy of manufacturing and expiration dates on packaged food items leads to potential health risks and consumer distrust. **Why is it Important?**

- Prevents consumption of expired or fraudulent food items.
- Strengthens regulatory compliance and brand reputation.
- Enhances supply chain transparency and efficiency.

Expected Impact of Solving This Problem

- Reduction in counterfeit food-related health issues.
- Increased consumer confidence in packaged food items.
- Streamlined verification processes for manufacturers and retailers.

Objectives

- Develop an application for automated verification of manufacturing and expiration dates.
- Integrate image recognition and database verification for accuracy.
- Provide a user-friendly interface for manufacturers, retailers, and consumers.
- Ensure real-time validation and reporting of suspicious products.

Methodology, Tools, and Techniques

Approach Taken to Solve the Problem

- Research on existing food safety verification techniques.
- Design and implementation of an AI-based image processing system.
- Integration with databases for real-time validation.

Tools, Software, and Techniques Used

- Machine learning for image recognition.
- Optical Character Recognition (OCR) for text extraction.
- Cloud-based storage for data validation.
- Mobile and web application development.

Justification for Chosen Methods

- AI-powered image recognition enhances accuracy in detecting tampered labels.
- Cloud-based verification ensures scalability and real-time processing.
- User-friendly application increases accessibility for stakeholders.

Tech Stack

Techonology	Use Cases
React Native	For building the mobile application interface – cross-platform, smooth UI/UX
Figma	For designing UI/UX mockups and wireframes before actual development
Node.js	For creating the backend API to handle OCR processing, verification, and database calls
OpenCV	For creating the backend API to handle OCR processing, verification, and database calls
MongoDB	As the database to store original product records, scanned results, and user data

Expected Results & Impact

Expected Results:

- Development of a functional prototype that verifies manufacturing and expiration dates.
- Effective identification of counterfeit and tampered food items.
- Seamless integration with manufacturer and retailer databases.
- Increased efficiency in food safety verification and reduced human error.
- A working application that can be demonstrated as a proof of concept.

Impact:

- Enhanced consumer confidence in the food industry through better transparency.
- Reduced health risks by ensuring only safe products reach consumers.
- Streamlined verification processes for manufacturers and regulatory agencies.
- Potential adoption of AI-based food safety measures across industries.
- Future extensions include broader adoption in pharmaceutical and cosmetic industries where expiration dates are critical.

THANK YOU