A SOFTWARE ENGINEERING PROJECT

ON

FOOD VISION ANALYSER BY USING ARTIFICIAL INTELLIGENCE

Submitted in partial fulfillment of the Requirements for the award of the degree of

Bachelor of Technology

In

Computer Science and Engineering

By

P.Sarath Chandra	RO200928
K.Manikanta	RO200119
C.Rupa Sree	RO201141
M.Priyanka	RO200589
K.Nandini	RO200352

Under the guidance of

Dr.MSR Kiran Nag , Assistant Professor

Department of Computer Science and Engineering

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES

(Established through Government of A.P Act of 18 of 2008)

Ongole, Prakasam(Dt.) AP-523225

CERTIFICATE

This is to certify that the project entitled "**FOOD VISION ANALYSER**" being submitted by **P. Sarath** bearing ID number **O200928 , K.Manikanta** bearing ID Number **O200119** , **K.Nandini** bearing ID Number **O200352, M.Priyanka** bearing ID Number **O200589** and **C .Rupa Sree** bearing ID Number **O201141** in partial fulfillment of the requirements for the award of the degree of the Bachelor of Technology in Computer Science and Engineering in **Rajiv Gandhi University of Knowledge Technologies – AP ., ONGOLE CAMPUS** is a record of bonafide work carried out by them under my guidance and supervision from july 2024 to December 2024.

The results presented in this project have been verified and found to be satisfactory. The results embodied in this project report have not been submitted to any other University for the award of any other degree or diploma.

Dr.MSR.Kiran Nag	**Mr. NANDI MALLIKARJUNA**
Assistant Professor	Head of the Department
Dept. of CSE	Dept. of Computer Science
RGUKT-AP, ONGOLE CAMPUS	RGUKT-AP, ONGOLE CAMPUS

Date:

Place: _____

APPROVAL SHEET

This report entitled "FOOD VISION ANALYSER BY USING ARTIFICIAL INTELLIGENCE" by P.Sarath bearing ID number O200928, M. Priyanka bearing ID number O200589, K.Nandini bearing ID number O200352, C.Rupa Sree bearing ID number O201141, K.Manikanta bearing ID number O200119 under supervision of Dr. MSR.KIRAN NAG, Assistant Professor is approved for Software Engineering Project and for the degree of Bachelor of Technology in Computer Science and Engineering at Rajiv Gandhi University of Knowledge Technologies- AP .,ONGOLE CAMPUS.

Examiner(s) _____

Supervisor(S) _____

Chairman _____

Date:

Place:

ACKNOWLEDGEMENT

It is our previlage to express a profound sense of respect,gratitude and indebtedness to our guide **Dr.MSR.Kiran Nag,Assistant Professor,**Department of Computer Science and Engineering,Rajiv Gandhi University of Knowledge Technologies- AP ONGOLE CAMPUS,for her indefatigable inspiration,gudiance inspiration,guidance,cogent disccussion,constructive criticisms and encouragement throughout the dissertation work.

We express our sincere gratitude to Mr. **N Mallikarjuna, Head of the Department**,Computer Science and Engineering,**Rajiv Gandhi University of Knowledge Technologies-AP ONGOLE CAMPUS**,for his suggestion motivations and co-operation for the successful completion of the work.

We extend our sincere thanks to **M.Rupas kumar, Dean Research and development**, **Rajiv Gandhi University of Knowledge Technologies-AP ONGOLE CAMPUS**, for his encouragement and constant help.

We extend our sincere thanks **Dr Bhaskar Patel, Director**,**Rajiv Gandhi University of Knowledge Technologies – AP ONGOLE CAMPUS**, for his encouragement.

P.Sarath Chandra	O200928
K.Nandini	O200352
C.Rupa Sree	O201141
M.Priyanka	O200589
K.Manikanta	O200119

DECLARATION

We hereby declare that the project work entitles **"Food Vision Analyser"** submitted to the **Rajiv Gandhi University of Knowledge and Technologies ., AP- ONGOLE CAMPUS** in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology(B.Tech)** in Computer Science and Engineering is a record of an original work done by us under the guidence of **Dr.MSR.Kiran Nag, Assistant Professor** and this project work have not been submitted to any university for the award of any other degree or diploma.

P.Sarath Chandra	**O200928**
M.Priyanka	**O200589**
K.Nandini	**O200352**
C.Rupa Sree	**O201141**
K.Manikanta	**O200119**

DATE:

Place:

ABSTRACT

The Food Vision Analyser project harnesses artificial intelligence to provide comprehensive insights into various dishes based on visual input.By uploading a food image or entering a dish name,users can instantly access detailed ingredient lists,preparation steps,and nutritional information.The project leverages Deep learning and computer vision to analyse food images accurately,using Gemini AI for powerful recognition and natural language generation.Through a streamlined Web Application,users interact via a responsive ,visually appealing interface developed with Flask,HTML,CSS and Java Script.Key features include Dynamic Ingredient Detection ,real-time display of Preparation Steps,and a nutritional analysis table,all of which provide users with a holistic understanding of the dish.

For greater accessibility,the application supports multiple methods,enhancing its versatility for diverse user needs.With the integration of Language Support,including telugu,the project makes a food-related information accessible to abroader audience.This system is ideal for food enthusiasts,health-conscious individuals,and culinary professionals seeking instant,accurate information about various dishes.The Food Vision Analyser demonstrates the potential of AI in enhancing everyday experiences,making complex food data both approachable and insightful through the power of machine learning and web-based interactivity.

TABLE OF CONTENT

1. INTRODUCTION

The Food Vision Analyzer is designed to take advantage of advanced Artificial Intelligence to list out the steps and ingredients to prepare a dish. By simply taking a photo of any meal, users can receive insights into its preparation methods and nutritional content, including caloric values, macronutrients (carbohydrates, proteins, and fats), and micronutrients (vitamins and minerals). This feature empowers users to understand their meals better and make informed dietary choices.

1.1 MOTIVATION:

Many people lack the time or knowledge to assess the nutritional value of their meals, especially when eating out or trying new cuisines. By creating a tool that uses computer vision to analyze food images, we aim to bridge this gap, empowering users to easily understand the nutritional information of various food items.

1.3 PROJECT STATEMENT:

The Food Vision Analyzer is an innovative application designed to empower users by providing detailed nutritional analysis and ingredient lists for various dishes through the use of artificial intelligence. By simply capturing an image of a meal, users can gain insights into its nutritional content including calories, macronutrients, and micronutrients as well as the specific ingredients and preparation methods used to create the dish.

1.4 PROJECT OBJECTIVES:

- Recipe Retrieval: Automatically retrieve or generate a detailed recipe, based on the name of the dish provided by the user..
- Ingredient List Generation: List all required ingredients with quantities and possible substitutions for dietary restrictions or preferences.
- Nutritional Analysis: Analyze food items to estimate calorie content and nutritional information.
- Image Recognition: Utilizing Artificial Intelligence models to accurately identify food items and analyze their combinations in a dish.
- User Engagement: A user-friendly interface that allows for easy interaction.

2. ANALYSIS

2.1 Project Analysis:

The Food Vision Analyzer aims to empower users by simplifying the process of understanding their food intake. Users can upload images of dishes to receive instant feedback regarding the ingredients, preparation methods, and nutritional content. This tool addresses the growing interest in health and nutrition.

2.2 Strengths:

- Real-Time Analysis: The ability in providing instant preparation of dishes which can encourage users to engage more actively with their cooking.
- Comprehensive Nutritional Insights: Offering detailed breakdowns of macronutrients and micronutrients can educate users about their food consumption.
- Versatility: The tool can be applied to various cuisines and learn cooking, making it adaptable to different user needs.

2.3 Limitations:

- Image Quality Dependency: The accuracy of food recognition is highly dependent on the quality and clarity of user-submitted images.
- Dishes with similar visual appearances can have varying ingredients and, hence, different nutritional profiles, leading to inaccuracies.
- Complex Dish Identification: Multi-component dishes may pose challenges for accurate ingredient identification and nutritional breakdown.

3.SOFTWARE REQUIREMENTS AND SPECIFICATION:

Front-end Technologies:

HTML : For structuring the main web interface.

CSS : To style and make the user interface attractive and responsive.

Javascript : To add interactivity, handle button actions and manage dynamic content updates.

Back-end Technologies:

Flask : A light-weight Python Framework used for handling Server-side logic,processing inputs,and connecting the frontend with AI model.

Gemini AI(AI model) : A generative AI model used for recognizing dish images or dish names. It predicts ingredients, provides preparation steps, and generates nutritional information based on the dish input..

Pillow : A Python imaging library used for resizing and normalizing images before feeding then into the AI model for accurate predictions.

4. PURPOSE:

The purpose of the Food Vision Analyzer project is to develop an accessible and user-friendly tool that empowers individuals to make healthier and more informed food choices. By using Artificial Intelligence, the application allows users to analyze images of dishes and receive detailed nutritional information along with ingredient lists and preparation methods.

4.1 PRIMARY GOALS:

1. Ingredient and Recipe Transperancy: To identify the ingredients and suggest possible preparation methods of various dishes, enabling users to recreate meals.

2. Convenience and Accessibility: To provide a quick and accessible solution for busy individuals, and those new to nutrition who want to understand their dietary intake without having to manually look up nutritional information.

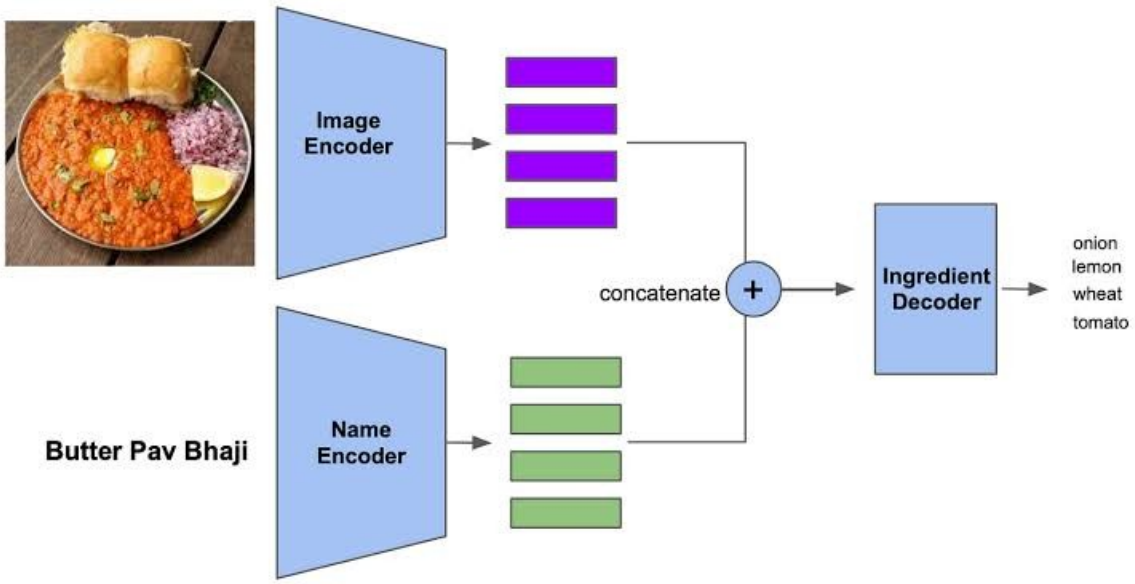
3. Educational Tool: To serve as an educational resource that helps users learn about the nutritional value of different foods and ingredients, and to raise awareness of how various cooking methods .

5. METHODOLOGY

The methodology for the Food Vision Analyzer project involves several key stages: data collection, model development, food recognition and analysis, nutritional analysis, and the user interface. This process leverages artificial intelligence, and nutritional science to enable users to take a photo of a dish and receive detailed nutritional information, ingredient lists, and preparation methods.

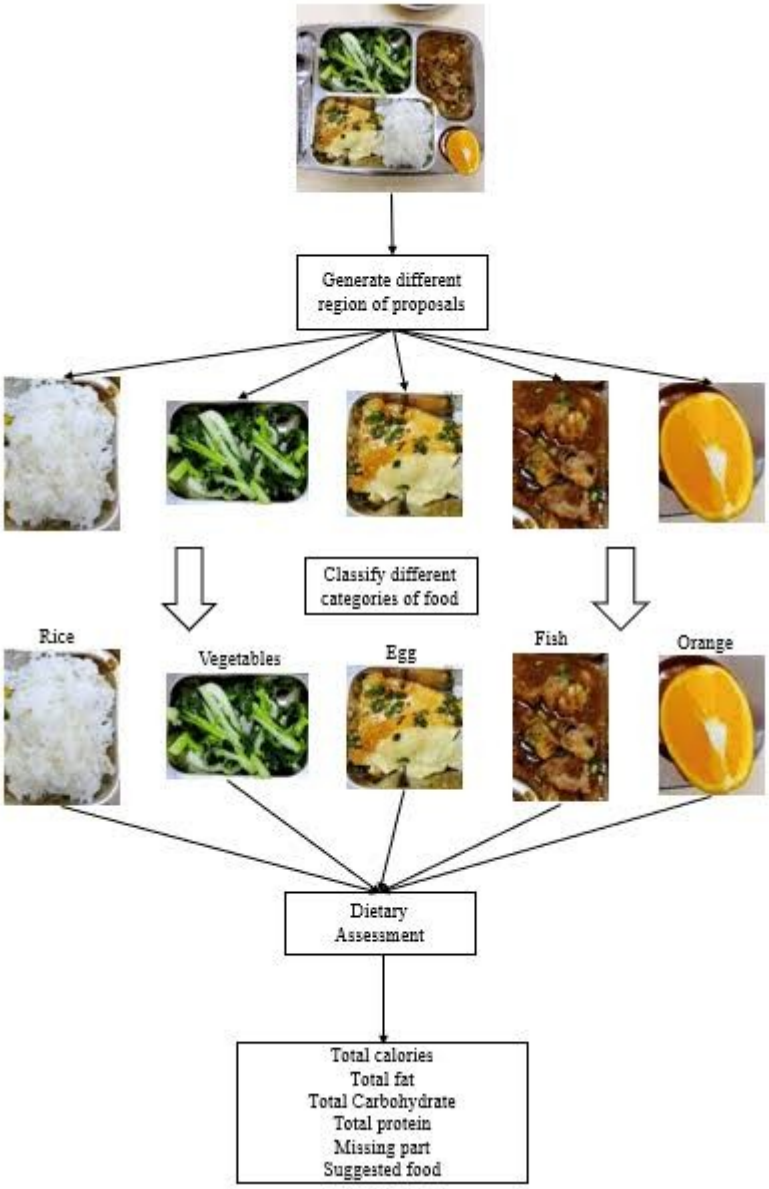
5.1 Data Collection & Preprocessing

The project requires a comprehensive dataset that includes food images, ingredient lists, preparation methods, and nutritional information. This stage involves gathering and preparing data to ensure the model can recognize a wide variety of dishes and provide accurate nutritional estimates.



5.2 Food Recognition and Ingredient Analysis

Once the model is trained, it can be used to identify food items and ingredients within an image. This step involves using the model to analyze photos and detect foods accurately, taking into account various factors.

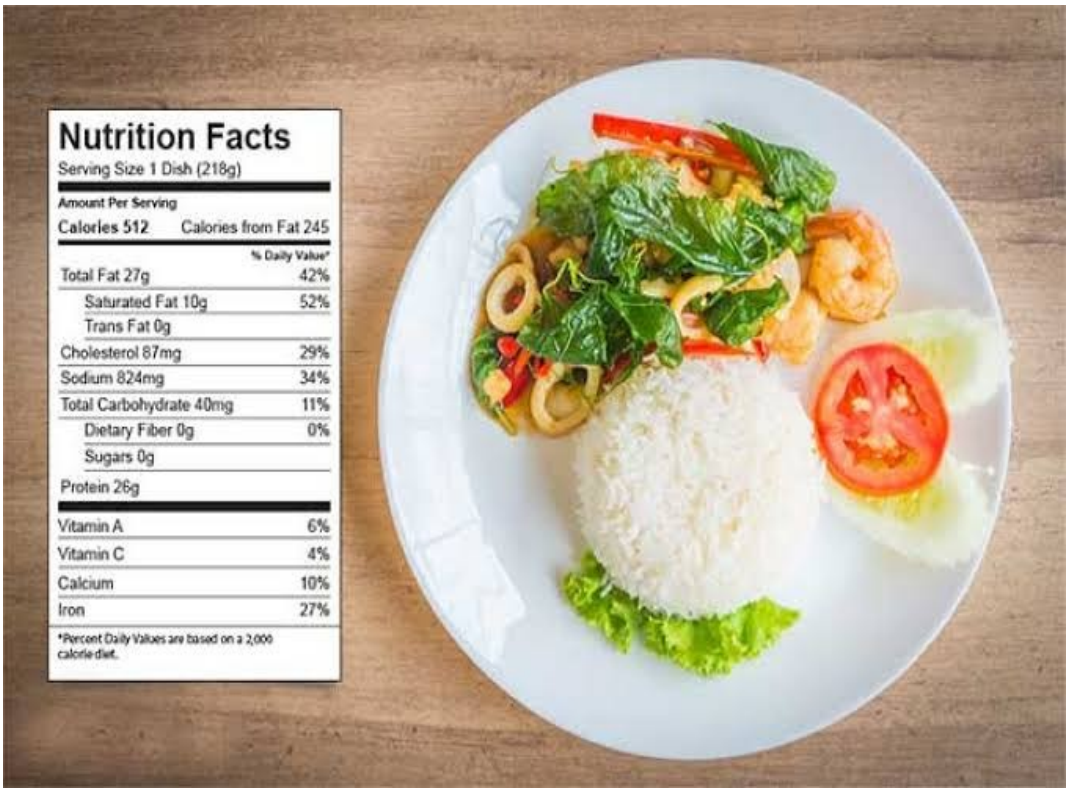


5.3 Nutritional Analysis

This stage involves combining the recognized food items with nutritional data to provide users with an accurate analysis of their meal.

Nutritional Mapping: Use the identified food items and ingredients to look up corresponding nutritional values (e.g., calories, macronutrients, vitamins, and minerals) from the integrated nutritional database.


Nutrition Facts
1 serving per container
Serving size 1/4 cup (40g)
Amount per serving
Calories 120
% Daily Value*


Nutrition Facts
Serving Size 1 Dish (218g)
Amount Per Serving
Calories 512 Calories from Fat 245
% Daily Value*
Total Fat 27g 42%
Saturated Fat 10g 52%
Trans Fat 0g
Cholesterol 87mg 29%
Sodium 824mg 34%
Total Carbohydrate 40mg 11%
Dietary Fiber 0g 0%
Sugars 0g
Protein 26g
Vitamin A 6%
Vitamin C 4%
Calcium 10%
Iron 27%
*Percent Daily Values are based on a 2,000 calorie diet.

5.4 User Interface Development:

- The user interface (UI) is designed to be intuitive and user-friendly, allowing users to interact easily. The UI development focuses on creating a seamless experience from image upload to nutritional analysis.
- Image Upload and Capture: Provide an option for users to upload photos from their gallery.

6. UML Class Diagram

1. FoodVisionAnalyser

Attributes: `model : MLModel`, `database : Database`
Methods:
- `analyzeFoodImage(image: Image): AnalysisResult`
- `getNutritionalInfo(foodItems: List<FoodItem>): NutritionInfo`

2. ImageProcessor

Methods:
`preprocessImage(image: Image): ProcessedImage`

3. FoodClassifier

Attributes: `model : MLModel`
Methods:
`classify(processedImage: ProcessedImage): List<FoodItem>`

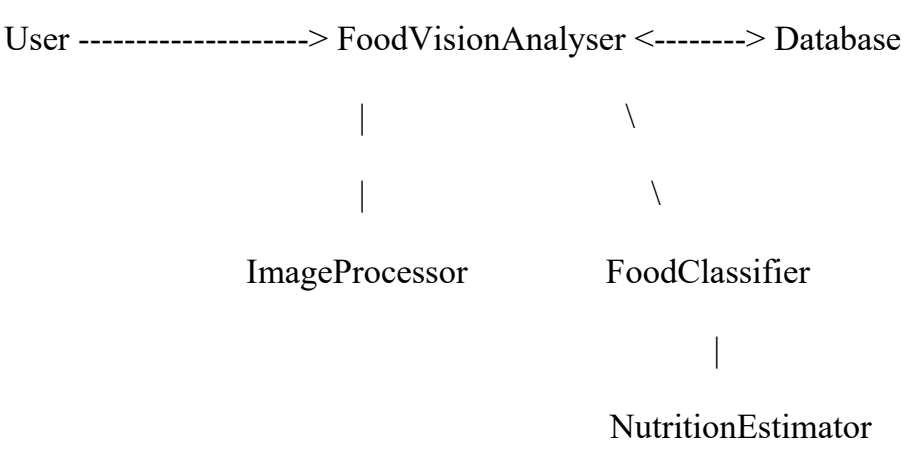
4. NutritionEstimator

Methods:
- `estimateCalories(foodItems: List<FoodItem>): int`
- `getNutritionalValues(foodItem: FoodItem): NutritionInfo`

5.Supporting Classes

- **FoodItem**: Represents a detected food item with attributes like `name :String,quantity : int`
- **NutritionInfo**: Stores nutritional details such as `calories : int`, `protein : float`, `fats : float`, `carbohydrates : float`.
- **AnalysisResult**: Represents the outcome of analyzing an image, containing attributes like `foodItems : List<FoodItem>`, `nutritionInfo : NutritionInfo.`

6.1 Example Structure in UML



7. Features

7.1 Ingredient Detection

AI-powered recognition identifies main ingredients from food images or dish names with high accuracy.

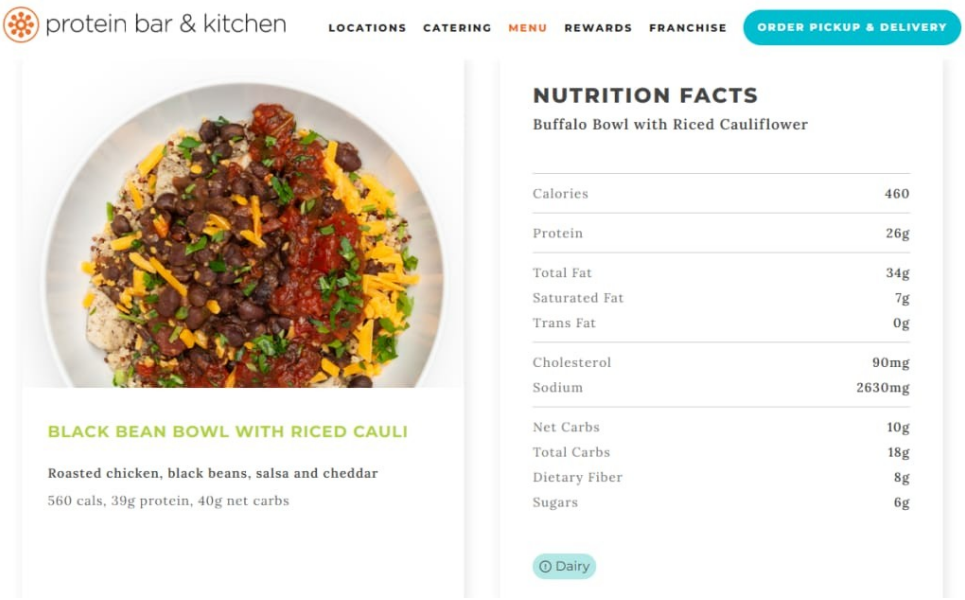
The feature identifies individual ingredients based on visual or textual data. For example, if a user photographs a salad,the system may identify components like, tomatoes, cucumbers, etc

Based on detected ingredients, some systems provide recipe suggestions, cooking tips, or alternative ingredient ideas. This feature is valuable fro users looking for cooking inspiration

7.2 Nutritional Breakdown

Comprehensive analysis of calories, macronutrients, and micronutrients for each dish.

Nutritional breakdown feature is ideal fro those looking to monitor their diet, optimize their nutrient intake,making it valuable tool for health-conscious users. Helps users understand the nutritional impact of their meals, supporting healthier choices.



7.3 Recipe Instructions

Step-by-step cooking guidance for recreating dishes,adaptable to user skill levels.

User choose a recipe based on their preferences, dietary restrictions, or ingredients they have on hand. Many apps allow users to search for recipes by cuisine, difficulty level, cooking time, or dietary needs.

8. Implementation

Source Code:

<!--Food Page.html-->

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta name="viewport" content="width-device-width, initial-scale=1.0">
   <link rel="stylesheet" href="{{ url_for('static', filename='styles0.css') }}">
   <title>FOOD VISION ANALYSER</title>
</head>
<body>
   <header>
      <div class="container">
         <h1 class="logo">Food Vision Analyser</h1>
         <nav>
            <ul class="nav-list">
               <a style="text-decoration: none;color: white;"
href="http://localhost:5000/dish"><li>Image to Ingredients</li></a>
               <a style="text-decoration: none;color: white;"
href="http://localhost:5000/cusine"><li>Recipe by Name</li></a>
               <a style="text-decoration: none;color: white;"
               href="http://127.0.0.1:5000/contact"><li>contact us</li></a>
            </ul>
         </nav>
      </div>
   </header>
   <section class="hero">
      <div class="hero-section">
         <h2>Welcome to our Recipe Collection !</h2>
         <p>Search mouth watering recipes to satisfy your craving.</p>
           <a href="http://localhost:5000/cusine" style="text-decoration: none;">
           <button class="btn"type="submit">Click here to search</button></a>
      </div>
      </section>
      <section class="recipies">
         <h2 style="text-align: center;">Featured Recipes</h2>
         <div class="recipie-section">
            <div class="recipie-card">
               <img src="firstdish.jpg" alt="">
               <h2>Chicken Biryani</h2>
               <p>lorem ipsum, dolor sit amel
```

```
                consectetur adipisicing.</p>
            <a href="#">View Recipe</a>
          </div>
          <div class="recipie-card">
            <img src="seconddish.jpg" alt="">
            <h2>Lemon Rice</h2>
            <p>lorem ipsum, dolor sit amel
              consectetur adipisicing.</p>
            <a href="#">View Recipe</a>
          </div>
          <div class="recipie-card">
            <img src="thirddish.jpg" alt="">
            <h2>Noodles</h2>
            <p>lorem ipsum, dolor sit amel
              consectetur adipisicing.</p>
            <a href="#">View Recipe</a>
          </div>
          <div class="recipie-card">
            <img src="fourthdish.jpg" alt="">
            <h2>Burger</h2>
            <p>lorem ipsum, dolor sit amel
              consectetur adipisicing.</p>
            <a href="#">View Recipe</a>
          </div>
        </div>
      </section>
      <footer>
        <div>
          <p>&copy; 2024 Delicious Recipes</p>
        </div>
      </footer>
</body>
<!--Contact page.html-→
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Contact Us | Food Vision Analyzer</title>
  <link rel="stylesheet" href="{{ url_for('static', filename='contactstyle.css') }}">
  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/
font-awesome.min.css">
</head>
<body>
  <!-- Navigation Bar -->
  <header>
    <div class="container">
      <h1 class="logo">Food Vision Analyser</h1>
      <nav>
        <ul class="nav-list">
```

```
                <a style="text-decoration: none;color: white;"
href="http://localhost:5000/"><li>HOME</li></a>
                <a style="text-decoration: none;color: white;"
href="http://localhost:5000/dish"><li>Image to Ingredients</li></a>
                <a style="text-decoration: none;color: white;"
href="http://localhost:5000/cusine"><li>Recipe by Name</li></a>
            </ul>
        </nav>
    </div>
  </header>
  <!-- Contact Section -->
  <section class="contact-section">
    <div class="contact-container">
      <h1>Contact Us</h1>
      <p>We'd love to hear from you! Whether you have a question about features, pricing, or
anything else, our team is ready to answer all your questions.</p>

      <!-- Contact Info -->
      <div class="contact-info">
        <div class="contact-card">
          <h2>Office Location</h2>
          <p>Rgukt Ongole , AP</p>
        </div>
        <div class="contact-card">
          <h2>Email</h2>
          <p><a
href="mailto:support@foodvisionanalyzer.com">support@foodvision.com</a></p>
        </div>
        <div class="contact-card">
          <h2>Phone</h2>
          <p>1400 1400 143</p>
        </div>
      </div>

      <!-- Contact Form -->
      <form class="contact-form">
        <label for="name">Your Name:</label>
        <input type="text" id="name" name="name" required>

        <label for="email">Your Email:</label>
        <input type="email" id="email" name="email" required>

        <label for="message">Message:</label>
        <textarea id="message" name="message" rows="5" required></textarea>

        <button type="submit">Send Message</button>
      </form>

      <!-- Social Media Links -->
      <div class="social-media">
```

```
            <p>Follow Us:</p>
            <a href="https://www.facebook.com/" class="fa fa-facebook" alt="Facebook"></a>
            <a href="https://twitter.com/" class="fa fa-twitter" alt="Twitter"></a>
            <a href="https://www.instagram.com/" class="fa fa-instagram" alt="Instagram"></a>
          </div>
        </div>
    </section>

    <!-- Footer -->
    <footer>
        <p>&copy; 2024 Food Vision Analyzer. All rights reserved.</p>
    </footer>
</body>
</html>
<!--Recipe by name page.html-→
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Dish Information</title>
    <link rel="stylesheet" href="{{ url_for('static', filename='styles2.css') }}">
    <title>Dish Information</title>
</head>
<body>
    <header>
        <div class="container">
            <h1 class="logo">Food Vision Analyser</h1>
            <nav>
                <ul class="nav-list">
                    <a style="text-decoration: none;color: white;"
href="http://localhost:5000/"><li>HOME</li></a>
                    <a style="text-decoration: none;color: white;"
href="http://localhost:5000/dish"><li>Nutri-check</li></a>

                    <a style="text-decoration: none;color: white;"
                    href="http://127.0.0.1:5000/contact"><li>contact us</li></a>

                </ul>
            </nav>
        </div>
    </header>
    <h1>Dish Information</h1>
    <form method="POST">
        <label for="language">Select Language:</label>
        <select name="language" required>
            <option value="English">English</option>
            <option value="Telugu">Telugu</option>
        </select>
        <br>
```

```
        <label for="dish_name">Enter Dish Name:</label>
        <input type="text" name="dish_name" required>
        <br>
        <label for="action">Select Action:</label>
        <select name="action" required>
            <option value="get_ingredients">Get Ingredients</option>
            <option value="get_preparation">Get Preparation Steps</option>
            <option value="get_nutrition">Get Nutritional Values</option>
        </select>
        <br>
        <button type="submit">Submit</button>
    </form>
    {% if response %}
        <h2>Response:</h2>
        <div class="respond">{{ response|safe }}</div>
    {% endif %}
</body>
</html>
```

//style.css

```
*{
    margin:0;
    padding:0;
    box-sizing:border-box;
    font-family:sans-serif;}
body{
    width:100%;
    min-height:100vh;
    background:#f8f8f8;}
header{
    height: 60px;
    width:100%;
    background: #222121;
    color:#fff;
    display:flex;
    align-items:center;}
.container{
    width:90%;
    margin:0 auto;
    display:flex;
    align-items: center;
    justify-content: space-between;}
nav ul li{
    list-style: none;
    display: inline;
    margin-right: 20px;
    font-weight: 550;}
.logo{
    font-size: 24px;}
.hero{
```

```
    width:100vw;
    height:100vh;
    background: url("/home/rguktongole/Desktop/images/heo-image.jpg");
    background-repeat: no-repeat;
    background-size: cover;
    background-position: center;
    color:#fff;
    text-align: center;
    padding:140px 0;
    margin-bottom: 20px;}
.hero h2{
    font-size: 36px;
    margin-bottom: 10px;}
.hero p{
        font-size: 20px;
        margin-bottom: 10px;}
.search-box{
    max-width:550px;
    margin:15px auto;
    display:flex;
    align-items: center;
    justify-content: center;}
.search-box input{
    width:70%;
    padding: 10px;
    outline: none;
    border: 0;
    border-radius: 5px 5px 5px 5px;
    font-size: 1rem;
    border: 1px solid  rgb(245, 37, 9);}
.btn{
    padding: 10px 20px;
    outline: none;
    border: 0;
    border-radius: 5px 5px 5px 5px;
    font-size: 1rem;
    background:  rgb(245, 37, 9);
     color: #fff;
    cursor: pointer;}
/*    .............Recipie sectiom .............>/
.recipies{
padding :50px 0;}
.recipies h1{
    text-align: center;
    margin-bottom: 30px;
    font-size:28px;}
.recipie-section{
    width:90%;
    margin:0 auto;
    display:grid;
```

```
   grid-template-columns:auto auto auto auto;
      column-gap: 10px;}
.recipie-card {
   background: #fff;
   margin: 30px 10px;
   border-radius: 8px;
   border:1px  solid #ccc;
   overflow: hidden;
   box-shadow: 0 4px 8px rgba(0 ,0,0,1);}
.recipie-card img{
         width: 100%;
         height: 200px;
         object-fit: cover;}
.recipie-card h2{
   font-size: 22px;
   padding: 20px;}
.recipie-card  p{
   font-size: 18px;
   padding: 20px;}
.recipie-card  a{
   display: block;
   text-align: center;
   text-decoration: none;
   background: #333;
   color:#fff;
   padding: 15px 0;
   cursor: pointer;}
footer{
   background: #333;
   padding: 20px 0;
   color:#fff;
   text-align: center;}
.menu-icon{
   font-size: 24px;
   padding: 20px;
   text-align: right;
   cursor: pointer;
   display: block;}
@media only scren and (max-width:768px){
   .menu-icon{
      display: none;}
   .nav-list{
      display:block;}
   /media query/
}
@media only scren and (max-width:768px){
   .hero h2{
      font-size: 28px;
   }
   .hero p{
```

```
      font-size: 15px;
   }}
 /* Contact form.css*/
* {
   margin: 0;
   padding: 0;
   box-sizing: border-box;
}
body {
   font-family: Arial, sans-serif;
   color: #333;
   background-color: #f8f8f8;
}

/* Header */
/* header {
   background-color: #4CAF50;
   color: white;
   padding: 10px 0;
   text-align: center;
} */
/* /* header nav ul {
   display: flex;
   justify-content: center;
   list-style: none;
}
header nav ul li {
   margin: 0 15px;
}
header nav a {
   color: white;
   text-decoration: none;
   font-size: 18px;
}
header nav a.active {
   text-decoration: underline;
} */

/* Contact Section */
.contact-section {
   padding: 40px;
   text-align: center;
}
.contact-container {
   max-width: 800px;
   margin: 0 auto;
}
.contact-info {
   display: flex;
   justify-content: space-around;
```

```
    margin-bottom: 20px;
}
.contact-card {
    background: white;
    padding: 15px;
    border-radius: 8px;
    box-shadow: 0 4px 8px rgba(0, 0, 0, 0.1);
    width: 25%;
}
.contact-form {
    background: black;
    padding: 20px;
    border-radius: 8px;
    box-shadow: 0 4px 8px rgba(0, 0, 0, 0.1);
    margin: 20px 0;
    text-align: left;
}
.contact-form label {
    display: block;
    font-weight: bold;
    margin-top: 10px;
    color:white;
}
.contact-form input, .contact-form textarea {
    width: 100%;
    padding: 10px;
    margin-top: 5px;
    border: 1px solid #ccc;
    border-radius: 5px;
    background-color: rgb(101, 95, 95);
    color:white;
}
.contact-form button {
    margin-top: 15px;
    padding: 12px;
    border: none;
    border-radius: 5px;
    background-color: #4CAF50;
    color: white;
    font-size: 16px;
    cursor: pointer;
    width: 100%;
}
.contact-form button:hover {
    background-color: #45a049;
}

/* Social Media */
.social-media {
    margin-top: 15px;
```

```
}
.social-media p {
    font-weight: bold;
}
.social-icon {
    display: inline-block;
    margin: 0 8px;
    width: 24px;
    height: 24px;
}

/* Footer */
footer {
    background: #333;
    color: white;
    padding: 10px 0;
    text-align: center;
    margin-top: 40px;
}
header{
    height: 60px;
    width:100%;
    background: #222121;
    color:#fff;
    display:flex;
    align-items:center;
}
header{
    height: 60px;
    width:100%;
    background: #222121;
    color:#fff;
    display:flex;
    align-items:center;
}
.container{
    width:90%;
    margin:0 auto;
    display:flex;
    align-items: center;
    justify-content: space-between;
}
nav ul li{
    list-style: none;
    display: inline;
    margin-right: 20px;
    font-weight: 550;

}
```

```
.logo{
    font-size: 24px;
    color: white;
}
.fa-facebook {
  background: #3B5998;
  color: white;
}
.fa-twitter {

    background: #55ACEE;
    color: white;
}
.fa-instagram {
    background: #cb2027;
    color: white;
}
.fa {
    padding: 20px;
    font-size: 30px;
    width: 50px;
    text-align: center;
    text-decoration: none;
    margin: 5px 2px;
  }
/*Recipe name.css*/
body {
    font-family: Arial, sans-serif;
    margin: 0;
    padding: 0;
    background-color: #f9f9f9;
    color: #333;
    background-image: url('tr3.jpg');
    background-repeat: no-repeat;
    background-size: cover ;
}

/* Header Styles */
h1 {
    color: white;
    text-align: center;
    margin-top: 20px;
}

/* Form Styles */
form {
    color:white;
    background-image: url('strb.webp');
    width: 80%;
    max-width: 500px;
```

```
    margin: 20px auto;
    padding: 20px;
    background-color: #fff;
    border-radius: 5px;
    box-shadow: 0 2px 10px rgba(0, 0, 0, 0.1);
}

label {
    display: block;
    margin: 10px 0 5px;
}

input[type="text"],
select {
    width: 100%;
    padding: 10px;
    margin: 10px 0;
    border: 1px solid #ccc;
    border-radius: 4px;
}

/* Button Styles */
button {
    background-color: #007bff;
    color: white;
    padding: 10px 15px;
    border: none;
    border-radius: 4px;
    cursor: pointer;
    font-size: 16px;
}

button:hover {
    background-color: #0056b3;
}

/* Response Styles */
h2 {
    color:white;
    text-align: center;
    margin-top: 20px;
}

.respond {
    background-color: #e9ecef;
    padding: 15px;
    border-radius: 4px;
    margin: 20px auto;
    width: 80%;
    max-width: 500px;
```

```
    box-shadow: 0 2px 5px rgba(0, 0, 0, 0.1);
}

/* Responsive Design */
@media (max-width: 600px) {
    form {
        width: 90%;
    }

    div {
        width: 90%;
    }
}
header{
    height: 60px;
    width:100%;
    background: #222121;
    color:#fff;
    display:flex;
    align-items:center;
}
.container{
    width:90%;
    margin:0 auto;
    display:flex;
    align-items: center;
    justify-content: space-between;
}
nav ul li{
    list-style: none;
    display: inline;
    margin-right: 20px;
    font-weight: 550;

}
.logo{
    font-size: 24px;
    color: white;
}
```

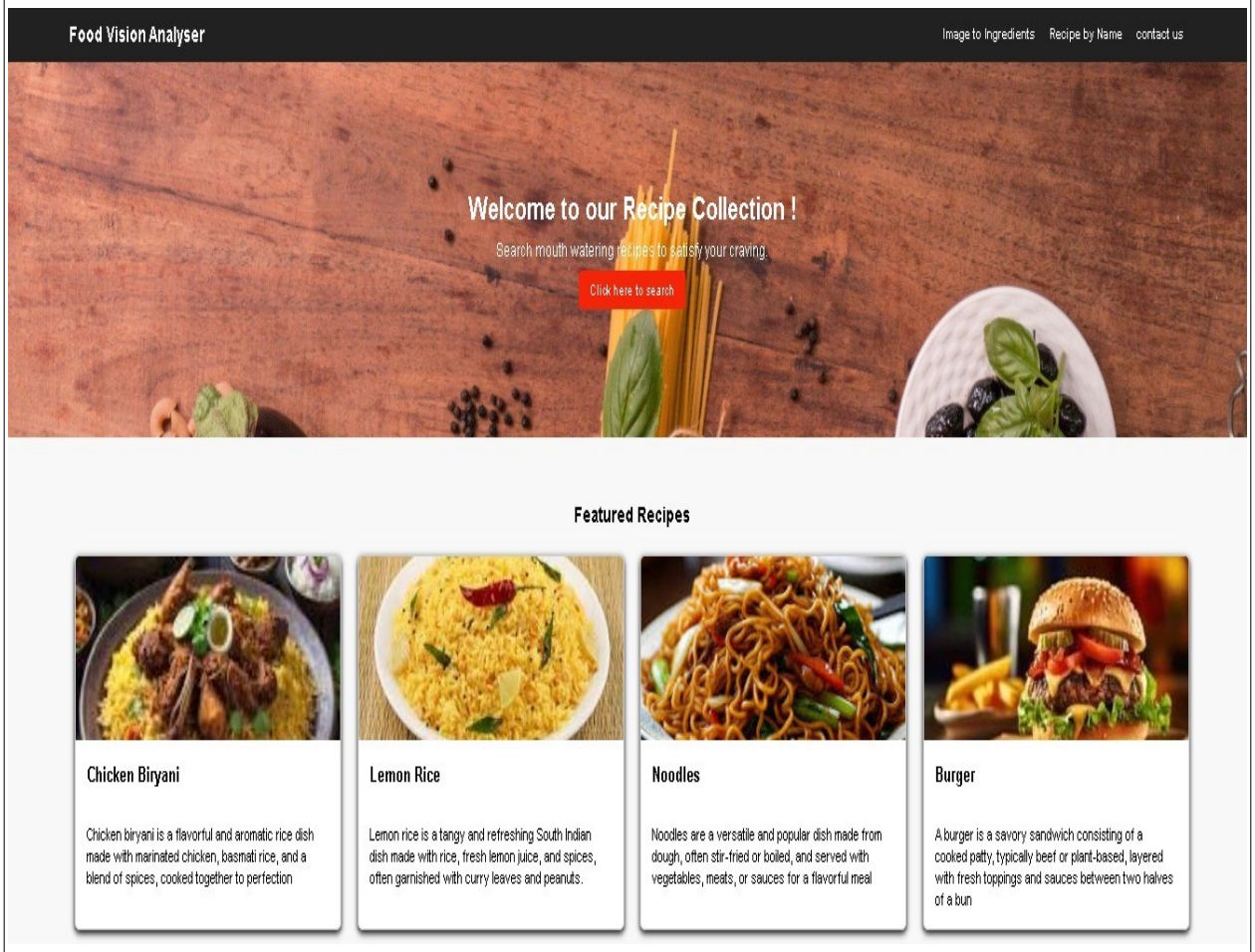
//main.py

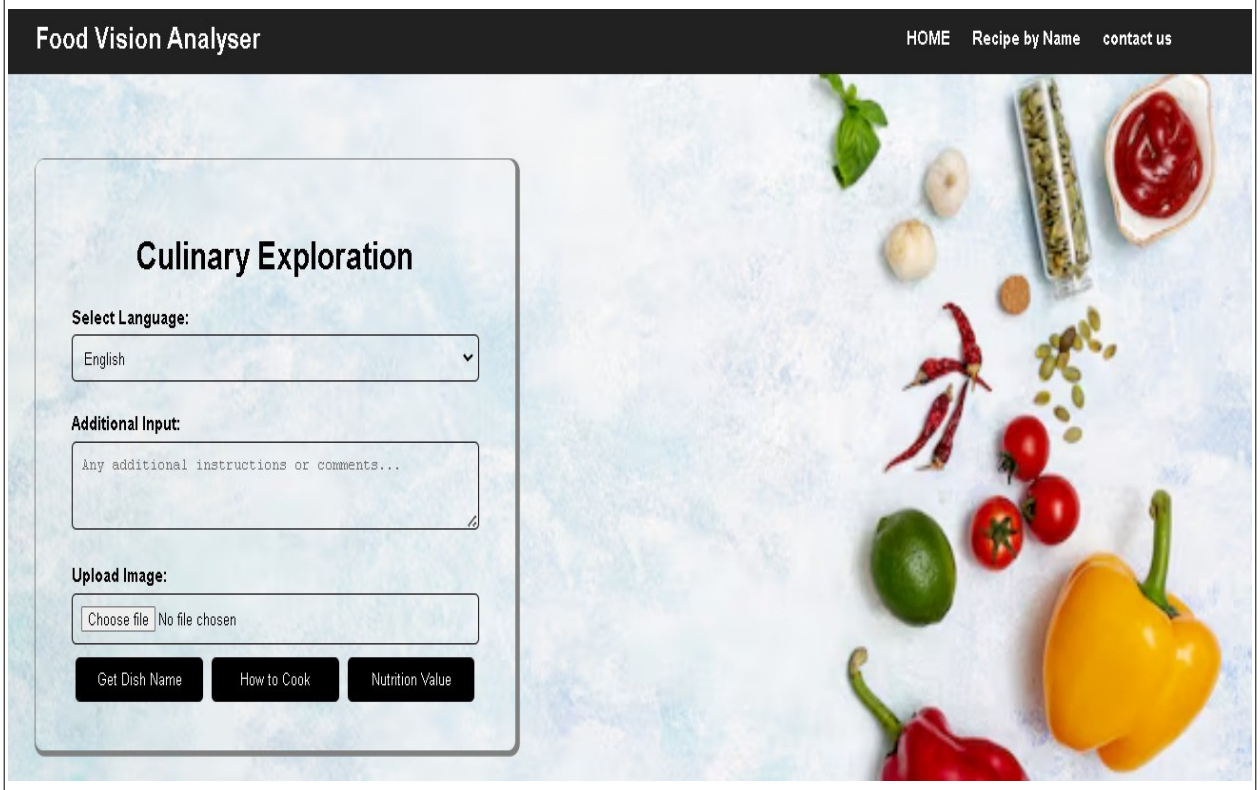
```
import os
from flask import Flask, render_template, request, redirect, url_for, send_from_directory
from werkzeug.utils import secure_filename
from PIL import Image
import google.generativeai as genai
from io import BytesIO
from flask import jsonify
import re
# Initialize Flask app
```

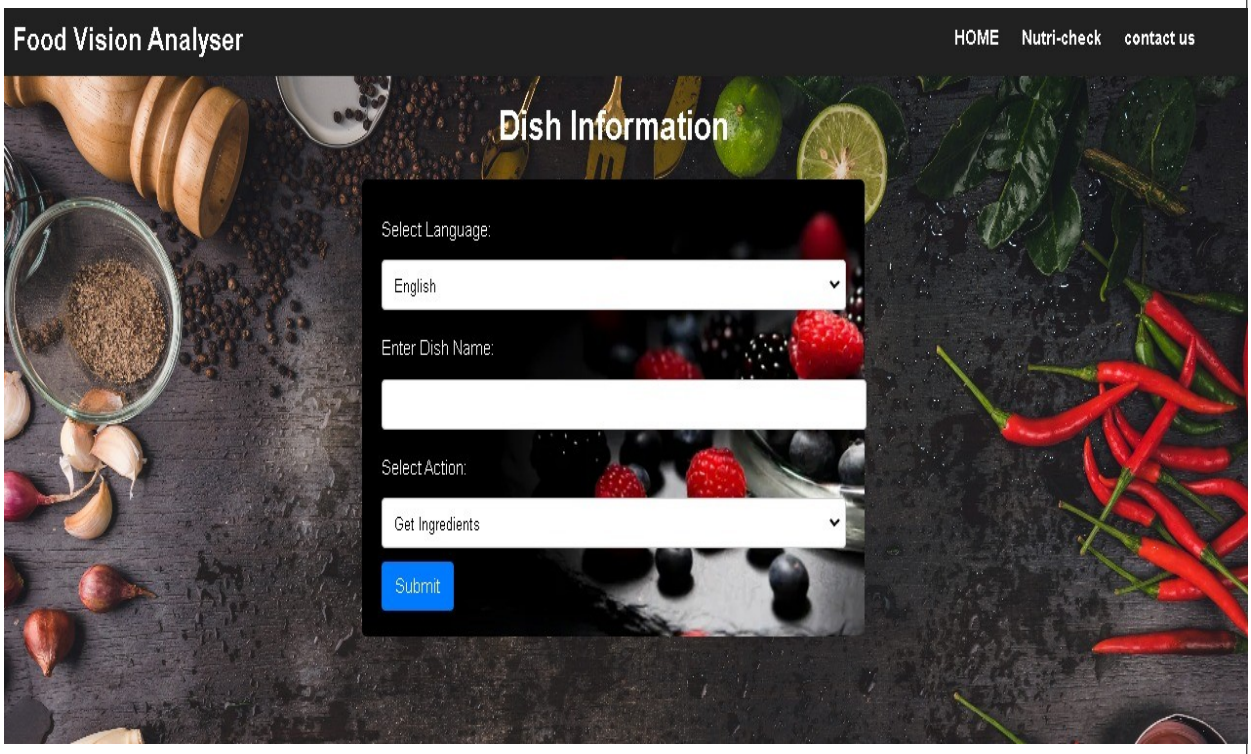
```
app = Flask(_name_)
@app.route('/')
def home():
   return render_template('homepage.html')

@app.route('/contact')
def contacts():
   return render_template('contact.html')

# Configure upload folder
UPLOAD_FOLDER = 'uploads'
app.config['UPLOAD_FOLDER'] = UPLOAD_FOLDER
os.makedirs(UPLOAD_FOLDER, exist_ok=True)

# Configure Google Generative AI
os.environ["GOOGLE_API_KEY"] = "AIzaSyAV6sfg2mb64Jw3uiDObFaeDkIHbKIaY1w"
genai.configure(api_key=os.environ["GOOGLE_API_KEY"])

# Define input prompts in English and Telugu
input_prompt1 = """
Embark on a culinary exploration as you uncover the secrets of the delectable dish in the uploaded image:
1. Discover the name of the dish.
2. Discover the ingredients required to prepare the dish only.
"""
input_prompt1_telugu = """
మీరు అప్‌లోడ్ చేసిన చిత్రంలో వంటకం యొక్క రహస్యాలను అన్వేషిస్తూ ఒక వంటక అన్వేషణలో పాల్గొనండి:
1. వంటకం యొక్క పేరు మరియు వంటకానికి సంబంధించిన ముఖ్యమైన వివరాలను కనుగొనండి.
2. వంటకంలోని ఆసక్తికరమైన మూలాలను అన్వేషించండి, దాని సాంస్కృతిక మరియు చారిత్రక ప్రాముఖ్యతను ఆవిష్కరించండి.
3. వంటకం యొక్క రుచికరమైన రుచిని తీసుకురావడంలో సహకరించే పదార్థాల గురించి పాయింట్ల రూపంలో వివరించండి.
"""
input_prompt2 = """
As a culinary maestro guiding eager chefs, lay out the meticulous steps for crafting the featured dish:
1."Can you provide a step-by-step guide for preparing this dish in simple English? Please include what needs to be done in each step, the ingredients to use, and how long or at what temperature to cook.
Make sure the instructions are easy for beginners to follow."
"""
input_prompt2_telugu = """
ఆసక్తికరమైన వంటకాన్ని తయారు చేయడానికి కావాల్సిన వివరణాత్మక దశలను వివరించండి:
1. నాణ్యత మరియు తాజాదనంపై ప్రత్యేక దృష్టితో ఉత్తమ పదార్థాలను ఎంచుకోవడం ప్రారంభించండి.
2. ప్రతి పదార్థాన్ని శుభ్రపరచడం, తొక్క తొలగించడం మరియు ఖచ్చితంగా తరిగే ప్రక్రియను వివరించండి.
```

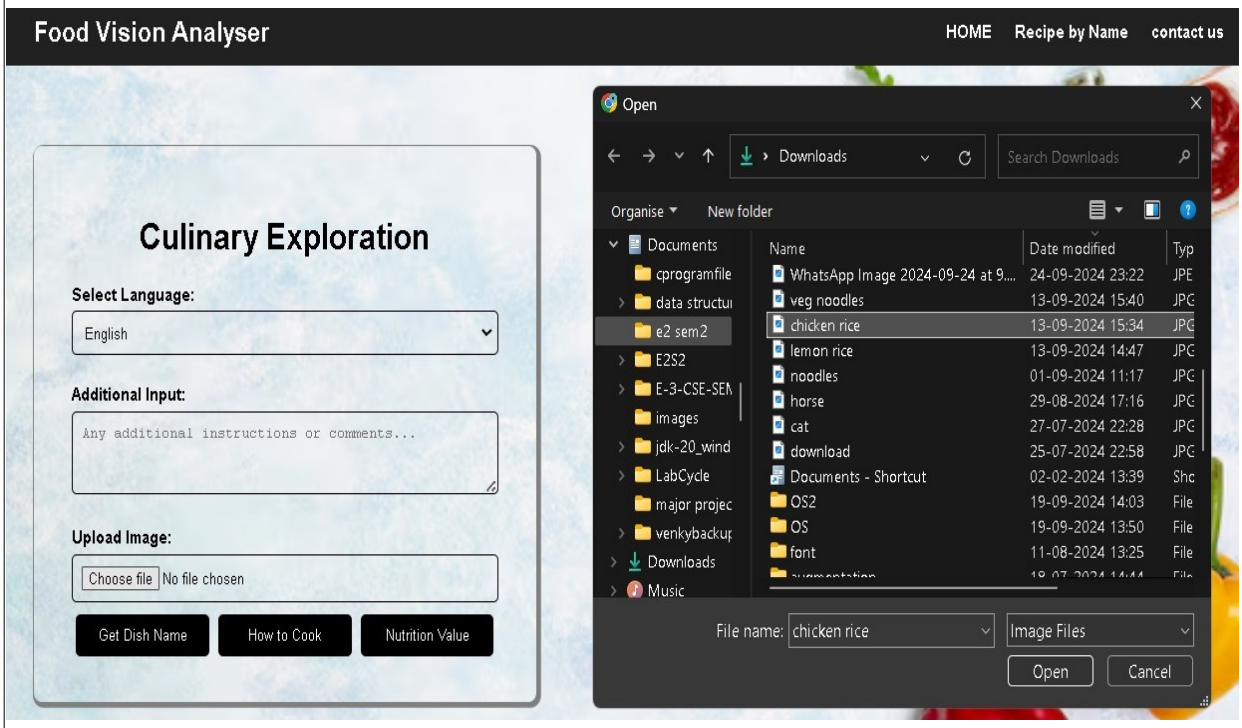
```
3. వంట ప్రక్రియలో ప్రతి దశను వివరించండి, వంటకాన్ని అద్భుతంగా మార్చడానికి నిపుణుల చిట్కాలు పంచుకోండి.
4. సాధారణ వంటకాన్ని అద్భుతంగా మార్చడానికి నైపుణ్యంతో ప్రదర్శించండి.
"""
input_prompt3 = """
In your role as a nutritional advisor, present a comprehensive overview of the dish's nutritional value:
1. Discover the ingredients required to prepare the dish.
2."Please provide the nutrition values in a table format.The table should have four columns: 'Nutrient', 'Amount' . Include calories, proteins, fats, and carbohydrates
"""
input_prompt3_telugu = """
పోషణ నిపుణుడిగా మీ పాత్రలో వంటకం యొక్క పూర్తి పోషక విలువలను సమర్పించండి:
1. కేలరీలు, ప్రోటీన్లు, కొవ్వులు మరియు కార్బోహైడ్రేట్లు వంటి పోషక విలువలను చూపించే పట్టికను డిసెండింగ్ క్రమంలో ప్రదర్శించండి.
2. ప్రతి పదార్థం యొక్క పోషక విలువలను వివరించే మరో పట్టికను తయారు చేయండి, వంటకంలోని ఆహార రహస్యాలను బయటపెట్టండి.
"""
input_prompt4 = """
Act as a nutritionist:
1. Discover the name of the dish.
2. Provide two vegetarian dish alternatives to the uploaded dish images that have similar nutritional values.
3. Provide two non-vegetarian dish alternatives to the uploaded dish  images that have similar nutritional values.
"""
# Helper functions
def get_gemini_response(input, image, prompt):
    model = genai.GenerativeModel('gemini-1.5-flash')
    response = model.generate_content([input, image[0], prompt])
    return response.text

def input_image_setup(uploaded_file):
    try:
        # Open the image using Pillow
        image = Image.open(uploaded_file)

        # Check the image format and set the MIME type accordingly
        img_format = image.format.lower()  # Detect the format of the image

        if img_format == 'jpeg' or img_format == 'jpg':
            mime_type = '…
```

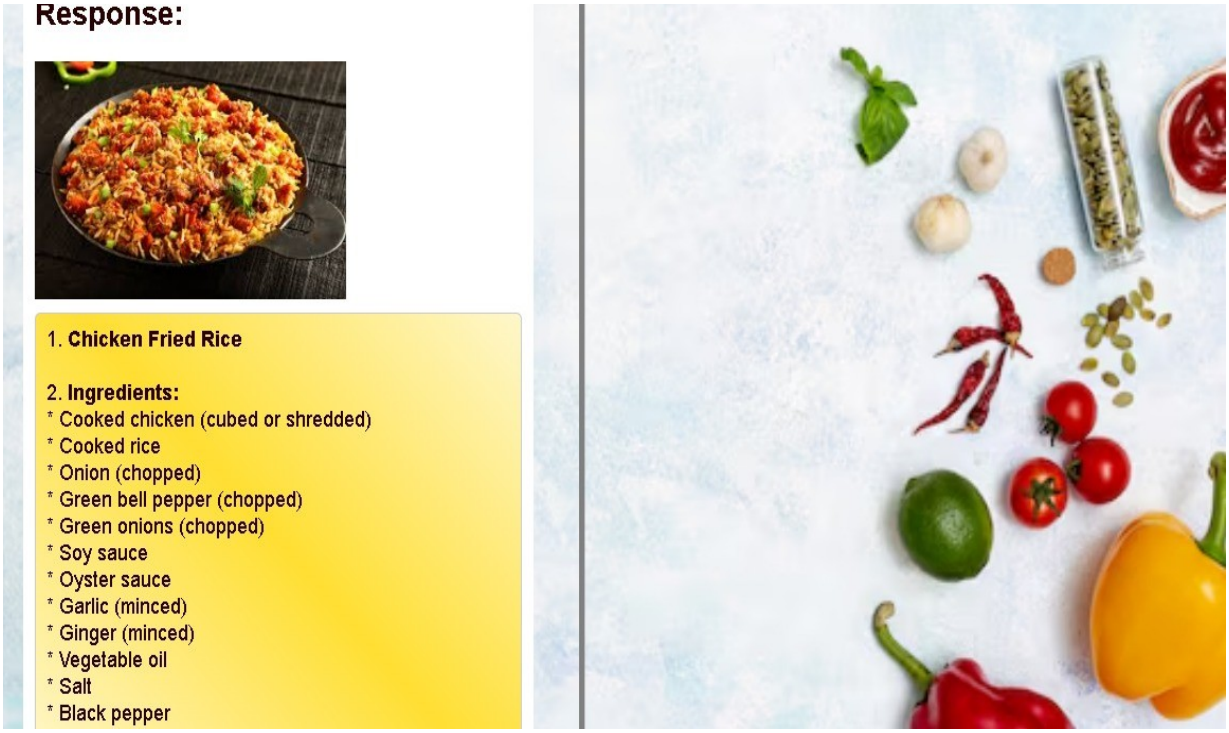
9.Testing


Food Vision Analyser
Image to Ingredients
Recipe by Name
contact us
Welcome to our Recipe Collection !
Search mouth watering recipes to satisfy your craving.
Click here to search
Featured Recipes
Chicken Biryani
Chicken biryani is a flavorful and aromatic rice dish made with marinated chicken, basmati rice, and a blend of spices, cooked together to perfection
Lemon Rice
Lemon rice is a tangy and refreshing South Indian dish made with rice, fresh lemon juice, and spices, often garnished with curry leaves and peanuts.
Noodles
Noodles are a versatile and popular dish made from dough, often stir-fried or boiled, and served with vegetables, meats, or sauces for a flavorful meal
Burger
A burger is a savory sandwich consisting of a cooked patty, typically beef or plant-based, layered with fresh toppings and sauces between two halves of a bun


Food Vision Analyser
HOME
Recipe by Name
contact us
Culinary Exploration
Select Language:
English
Additional Input:
Any additional instructions or comments...
Upload Image:
Choose file
No file chosen
Get Dish Name
How to Cook
Nutrition Value


Food Vision Analyser
HOME
Nutri-check
contact us
Dish Information
Select Language:
English
Enter Dish Name:
Select Action:
Get Ingredients
Submit


Food Vision Analyser
HOME
Recipe by Name
contact us
Culinary Exploration
Select Language:
English
Additional Input:
Any additional instructions or comments...
Upload Image:
Choose file
No file chosen
Get Dish Name
How to Cook
Nutrition Value
Open
Downloads
Search Downloads
Organise
New folder
Documents
cprogramfile
data structui
e2 sem2
E2S2
E-3-CSE-SEM
images
jdk-20_wind
LabCycle
major projec
venkybackup
Downloads
Music
Name
Date modified
Typ
WhatsApp Image 2024-09-24 at 9....
24-09-2024 23:22
JPE
veg noodles
13-09-2024 15:40
JPG
chicken rice
13-09-2024 15:34
JPG
lemon rice
13-09-2024 14:47
JPG
noodles
01-09-2024 11:17
JPG
horse
29-08-2024 17:16
JPG
cat
27-07-2024 22:28
JPG
download
25-07-2024 22:58
JPG
Documents - Shortcut
02-02-2024 13:39
Shc
OS2
19-09-2024 14:03
File
OS
19-09-2024 13:50
File
font
11-08-2024 13:25
File
File name:
chicken rice
Image Files
Open
Cancel


Response:
1. Chicken Fried Rice
2. Ingredients:
* Cooked chicken (cubed or shredded)
* Cooked rice
* Onion (chopped)
* Green bell pepper (chopped)
* Green onions (chopped)
* Soy sauce
* Oyster sauce
* Garlic (minced)
* Ginger (minced)
* Vegetable oil
* Salt
* Black pepper

Step 1: The Chicken's Transformation

1. In a hot skillet or wok, heat the vegetable oil over medium-high heat.
2. Add the chicken pieces and stir-fry for 3-4 minutes until golden brown and cooked through.
3. Season with salt and pepper, then remove the chicken from the skillet and set aside.

Step 2: Vegetable Rhapsody

1. Add the chopped onion, carrots, bell pepper, and celery to the same skillet and stir-fry for 3-4 minutes until softened but still slightly crisp.
2. Add the minced garlic, soy sauce, sesame oil, and ground ginger. Stir-fry for another minute, allowing the aromas to mingle.

Step 3: Rice's Revival

1. Add the cooked rice to the skillet and gently mix with the vegetables.
2. Stir-fry for 2-3 minutes until the rice is heated through and absorbs the flavors.

Step 4: The Egg's Embrace

1. Push the rice mixture to one side of the skillet, creating a space.
2. Pour the beaten eggs into the space and scramble quickly with a spatula, creating small curds.
3. Gently mix the eggs into the rice.

Nutritional Value of Vegetable Noodles with Egg

Ingredients:

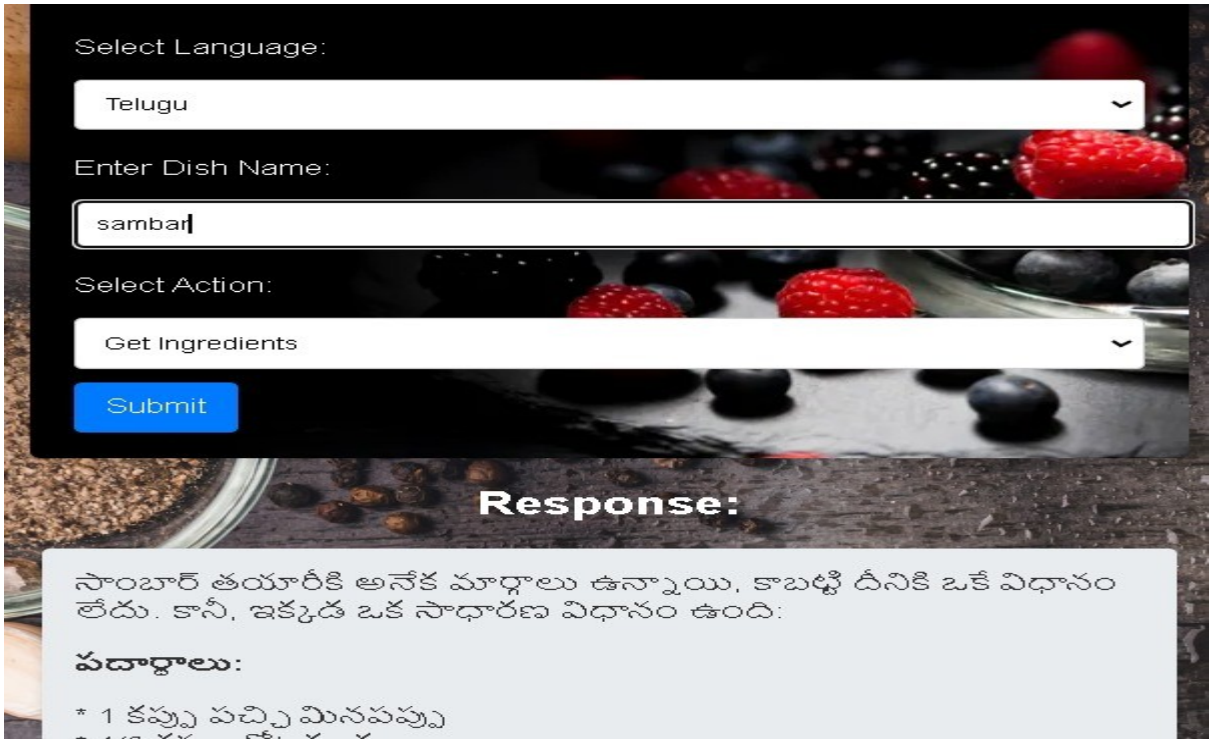
* 1 cup cooked noodles (type of noodle varies)
* 1/2 cup chopped vegetables (e.g., carrots, celery, bell peppers)
* 1 tablespoon soy sauce
* 1 tablespoon vegetable oil
* 1 egg

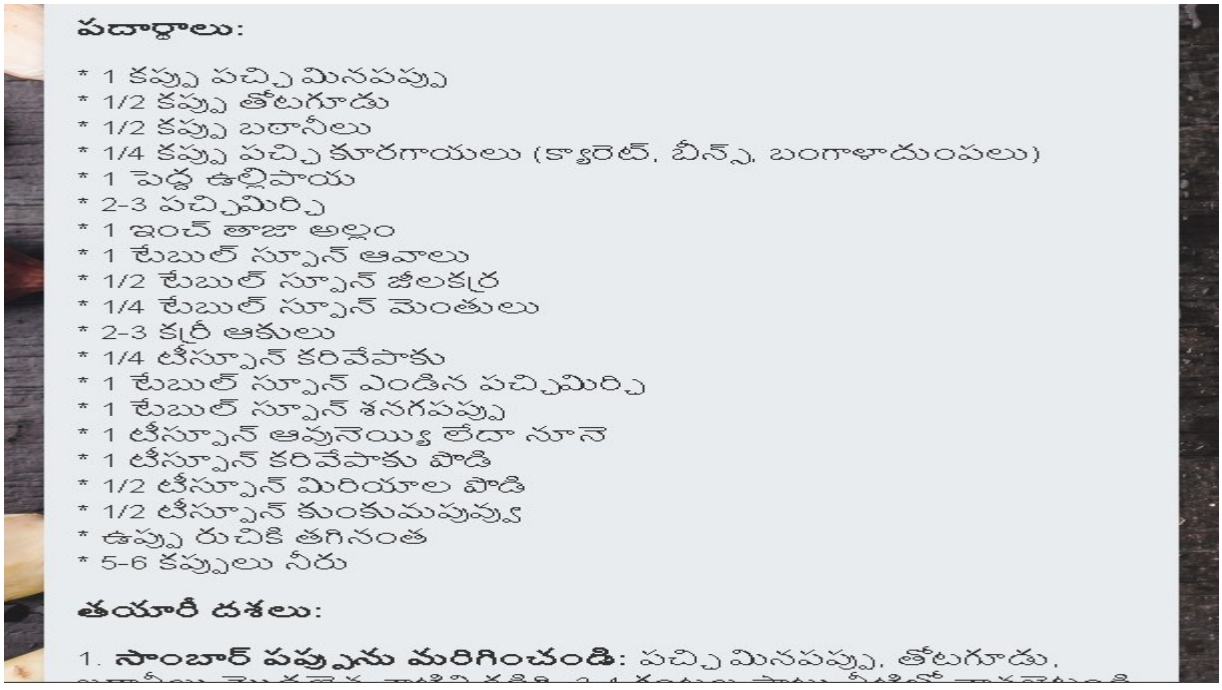
Nutritional Value:

Nutrient	Amount
Calories	300-400 (approx.)
Protein	15-20 grams
Fat	10-15 grams
Carbohydrates	40-50 grams

Breakdown:

* **Noodles:** The calorie and carbohydrate content will depend on the type of noodles used. Whole wheat noodles will provide more fiber and nutrients.
* **Vegetables:** The vegetables provide essential vitamins, minerals, and fiber, contributing to the dish's nutritional value.
* **Soy Sauce:** While soy sauce adds flavor, it is high in


Select Language:
Telugu
Enter Dish Name:
sambar
Select Action:
Get Ingredients
Submit
Response:
సాంబార్ తయారీకి అనేక మార్గాలు ఉన్నాయి, కాబట్టి దీనికి ఒకే విధానం లేదు. కానీ, ఇక్కడ ఒక సాధారణ విధానం ఉంది:
పదార్థాలు:
* 1 కప్పు పచ్చి మినపప్పు


పదార్థాలు:
* 1 కప్పు పచ్చి మినపప్పు
* 1/2 కప్పు తోటగూడు
* 1/2 కప్పు బఠానీలు
* 1/4 కప్పు పచ్చి కూరగాయలు (క్యారెట్, బీన్స్, బంగాళాదుంపలు)
* 1 పెద్ద ఉల్లిపాయ
* 2-3 పచ్చిమిర్చి
* 1 ఇంచ్ తాజా అల్లం
* 1 టేబుల్ స్పూన్ ఆవాలు
* 1/2 టేబుల్ స్పూన్ జీలకర్ర
* 1/4 టేబుల్ స్పూన్ మెంతులు
* 2-3 కర్రీ ఆకులు
* 1/4 టీస్పూన్ కరివేపాకు
* 1 టేబుల్ స్పూన్ ఎండిన పచ్చిమిర్చి
* 1 టేబుల్ స్పూన్ శనగపప్పు
* 1 టీస్పూన్ ఆవునెయ్యి లేదా నూనె
* 1 టీస్పూన్ కరివేపాకు పొడి
* 1/2 టీస్పూన్ మిరియాల పొడి
* 1/2 టీస్పూన్ కుంకుమపువ్వు
* ఉప్పు రుచికి తగినంత
* 5-6 కప్పులు నీరు
తయారీ దశలు:
1. సాంబార్ పప్పును మరిగించండి: పచ్చి మినపప్పు, తోటగూడు,

10.1.User Experience Features

- **Image Recognition** : Upload an image for instant food preparation.
- **Text Search** : Enter dish names for detailed information without needing an image.
- **Dynamic Ingredients**: Clear, organized presentation of ingredients and nutritional data.

10.2 .Future Enhancements

Health Tracking : Introduce personalized calorie tracking and meal planning based on individual goals.

Expanded Database : Incorporate more regional and speciality dishes for comprehensive global coverage.

Dietary Filters : Implement preference based searches for specific diets Like vegan or gluten-free options

10.3.Market Impact

Culinary Industry : Assists chefs and food bloggers in recipe development. Enchancing menu planning for restaurants.

Education :Serves as a learning tool for new cooks – people just Starting to learn such as teenagers or young adults.

11. Conclusion

The Food Vision Analyzer project has successfully demonstrated the potential of using artificial intelligence to identify and analyze food items from images. Through the integration of image recognition and nutritional databases, this system offers users valuable insights into the foods they consume, helping individuals make more informed decisions about their diet and health. The system's ability to classify food items, estimate portion sizes, and provide detailed nutritional information represents a significant step forward in the realm of personalized nutrition and dietary tracking.

The Food Vision Analyzer using Artificial Intelligence is a versatile tool that transforms the way users interact with culinary information by utilizing advanced image recognition and NLP techniques. This project not only identifies ingredients from uploaded images and provides step-by-step cooking instructions but also enables users to retrieve recipes by simply entering a dish name, thereby enhancing convenience and accessibility. Through its dual input options, the application offers a seamless user experience that caters to a wide range of culinary needs, from quick ingredient recognition to detailed cooking guidance.

With the integration of Gemini AI, this project highlights how machine learning can bridge the gap between food imagery and actionable cooking information, allowing users to explore recipes, ingredients, and cooking methods with ease. The future scope of this project is vast; possible enhancements include adding nutritional breakdowns, incorporating dietary preferences, and providing multilingual support. Overall, the Food Vision Analyzer not only simplifies cooking for users but also stands as a testament to how AI can transform everyday tasks, making it a valuable asset for home cooks, food enthusiasts, and anyone looking to expand their culinary repertoire.

Overall, the Food Vision Analyzer project has laid a strong foundation for the future of AI-powered food analysis. With continued development, the system can evolve into an even more robust tool for revolutionizing the way we interact with food, making it easier to track, analyze, and optimize our dietary choices.

12.References :

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