NUTRITION ASSISTANT APPLICATION

A PROJECT REPORT

Submitted by

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1. INTRODUCTION

Project Overview

- This project aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food.

- Due to the ignorance of healthy food habits, obesity rates are increasing at an alarming speed, and this is reflective of the risks to people's health

- People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity

- However, although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people to refer to App-based nutrient dashboard systems which can analyze real-time images of a meal and analyze it for nutritional content which can be very handy and improves the dietary habits, and therefore, helps in maintaining a healthy lifestyle.

Purpose

The Purpose of our Project is

- It helps dieticians with providing proper nutrition at healthcare facilities.They determine patients nutritional needs.
- It assess factors and plans, meals and menus.
- They also ensure proper sterilization of plates and utensils.
- Nutitionists work to help people establish good connections between healthy weights and overall health.

1. LITERATURE SURVEY

Existing Problem :

- Patients who have to maintain diet have to give their body health details.
- They have check their BMI value to predict the food for them.
- Then the image or url of a food have to upload to know the further details of food.
- Finally,the patients have to follow the predicted food and maintain diet with respect to the nutrition details of a doof which is obtained.

References :

https://www.researchgate.net/publication/346411010_DEVELOPMENT_OF_A_CLOUD_BASED_SOLUTION_FOR_EFFECTIVE_NUTRITION_INTERVENTION_IN_THE_MANAGEMENT_O F_LIFESTYLE_DISEASES

https://www.academia.edu/43016077/A_DIET_CONTROL_AND_FITNESS_ASSISTANT_APPLICATION_USING_DEEP_LEARNING_BASED_IMAGE_CLASSIFICATION

S. Fang, Z. Shao, R. Mao, C. Fu, E. J. Delp, F. Zhu, D. A. Kerr, andC. J. Boushey, ‘‘Single- view food portion estimation: Learning Image-to-Energymappings using generative adversarial networks,’’ in Proc. 25thIEEEInt. Conf. Image Process. (ICIP), Oct. 2018, pp. 251–255.

Z. Ge, C. McCool, C. Sanderson, and P. Corke, ‘‘Modelling local deepconvolutional neural network features to improve fine-grainedimageclassification,’’ in Proc. IEEE Int. Conf. Image Process. (ICIP), Sep. 2015, pp. 4112–4116.

https://www.emizentech.com/blog/diet-nutrition-tracking-app-development.html

c. **Problem statement definition:**

Due to the ignorance of healthy food habits, obesity rates are increasing at an alarming speed, and this is reflective of the risks to people's health.

People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity. However, although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people to refer to App-based nutrient dashboard systems which can analyze real- time images of a meal and analyze it for nutritional content which can be very handy and improves the dietary habits, and therefore, helps in maintaining a healthy lifestyle.

The main objective of this project is to building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food.

1. Who are all affected by this issue?

- People from all age group who are all careless about their health due to their busy schedule and high calorie diet.
- This leads to an unhealthy lifestyle because of their eating habits.
- Thus leads to many health issues like obesity, heart attack, diabetics and rise in cholesterol level.

2. What are the boundaries of the problem?

- Based on the information collected from the user, if the user is diagnosed with diabetes/Heart attack/obesity then the application provides informatio n about diet.

ems with digestion so they will be provided with that information.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy map canvas:

Title:- Nutrition Assistant Application
Team Id:- PNT2022TMID23092

3.2 Ideation & Brainstorming

3.3 Proposed Solution

S.No .	Parameter	Description
1	Problem Statement (Problem to be solved)	This project aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food. Our method employs Clarifai's AI-Driven Food Detection Model. **Modules Used:** • Registration (Push the registration data into the database) Login (Fetch the data upon login) Upload the food image and get the prediction Get Calories from the food items Add food data to the database
2	Idea / Solution description	This project aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food. Our method employs Clarifai's AI-Driven Food Detection Model. Modules Used: • Registration (Push the registration data into the database) • Login (Fetch the data upon login) • Upload the food image and

		get the prediction • Get Calories from the food items • Add food data to the database
3	Novelty / Uniqueness	User can know about the calories in the food and be aware of the health conditions. They can reduce the obesity level and be aware of nutrition available in the food.
4	Social Impact / Customer Satisfaction	User can easily categories the healthy food and unhealthy foods by using this web app. Food related disease can be prevented. Nutrition apps can help make life easier for individuals who need to track their food intake for health reasons. Preventive nutrition services for this population, which include early identification and treatment, can help alleviate malnutrition, growth retardation, frequent infections, dehydration, and other medical consequences
5	Business Model (Revenue Model)	This system is incorporated with Clarifai's AI-Driven Food Detection Model to accurately measure the nutrition available in the food and filter them based on the attributes in the food in it.
6	Scalability of the Solution	Our project solution is platform independent. In future various machine learning algorithms canbe applied on the AI and UI interfaces of web app can be developed and modified.we use IBM cloud storage which is efficient in storing huge amount of data

3.4 Problem Solution fit

The Problem solution aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of food. Our method employs Clarifai's AI-Driven Food Detection Model for accurate food identification and Food API's to give the nutritional value of the identified food..

PURPOSE:

- ❑ Solve complex problems in a way that fits the state of your customers.
- ❑ Succeed faster and increase your solution adoption by tapping intoexistingmediumsand channels of behavior.
- ❑ Sharpen your communication and marketing strategy with the right triggersandmessaging.
- ❑ Increase touch-points with your company by finding the right problem-behavior fit andbuilding trust by solving frequent annoyances, or urgent or costly problems.

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) — CS

Who is your customer?

The main customer of our project are:

- Person who seeking for weight loss
- Person who need nutrition rich food
- Person who need to maintain nutrition in their body

6. CUSTOMER — CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

- Inadequate product knowledge
- Worry about unreliable data
- Concern about misuse of personal information

5. AVAILABLE SOLUTIONS — AS

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons dothese solutions have? i.e. pen and paper is an alternative to digital notetaking

Pros	Cons
* People can reduce obesity	* Display irrelevant data
* User can have a healthy life	* Difficult to predict Nutrition's
* Rich Nutrition food is predicted	* Delivering of false information

Explore AS, differentiate

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS — J&P

Which jobs-to-be-done (or problems) do you address for your customers?There could be more than one; explore different sides.

- Create a platform to Find the nutrition amount present in the body
- A platform to make it simple to identify the nutrition rich food
- Make the nutrition filtering process easy
- Data are stored secured

9. PROBLEM ROOT CAUSE — RC

What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.

- Many apps fails to display the accurate result
- Some of the application are paid
- The data displayed on the application is irrelevant
- Failed to identify the ingredient's present in the food

7. BEHAVIOUR — BE

What does your customer do to address the problem and get the job done? i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)

- When the food is detected wrongly the user get upset
- Users not satisfied when the application is paid
- Users confused when the application shows irrelevant data
- Failed to reduce obesity the application is useless

Focus on J&P, tap into BE, understand RC

Identify strong TR & EM

3. TRIGGERS — TR

What triggers customers to act? i.e. seeing their neighbour installingsolar panels, reading about a more efficient solution in the news.

* Reduce obesity
* Have a healthy life
* Maintain body weight
* Find nutrition rich food

4. EMOTIONS: BEFORE / AFTER — EM

How do customers feel when they face a problem or a job and afterwards? i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

Emotions Before	Emotions After
Lack of Information about Nutrition food	User can easily identify nutrition food
No proper app to reduce obesity	User can easily reduce their obesity
No detailed report is maintained	Detailed report is maintained.

10. YOUR SOLUTION — SL

If you are working on an existing business, write down your current solution first,fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill inthe canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

To develop an end-to-end web application which help the user to maintain the nutrition present intheir body. And help the user to eat nutrition richfood. also allow to maintain diet. At the same time the user details is maintained.

8. CHANNELS of BEHAVIOUR — CH

8.1 ONLINE
What kind of actions do customers take online? Extract online channels from #7

- Upload photo of Food
- Nutrition content is predicted
- Maintain the nutrition present in it

8.2 OFFLINE
What kind of actions do customers take offline? Extract offline channels from #7and use them for customer development.

- See the history of the foods taken
- See the nutrition table
- See the health of their body

Extract online & offline CH of BE

4. REQUIREMENT ANALYSIS

4.1 Functional requirement :

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Sign in / Login	Register with username, password.
FR-2	Profile Registration	Register with username, password, email, This data will be stored in a database.
FR-3	Upload Food image	Upload the image which should be eaten.
FR-4	Nutrition Content Display	Display Nutrition and Calories present in the food.
FR-5	Reduce obesity	User can reduce their obesity based on the instructions given by the application.
FR-6	Logout	Use logout option.

4.2 Non-Functional requirement :

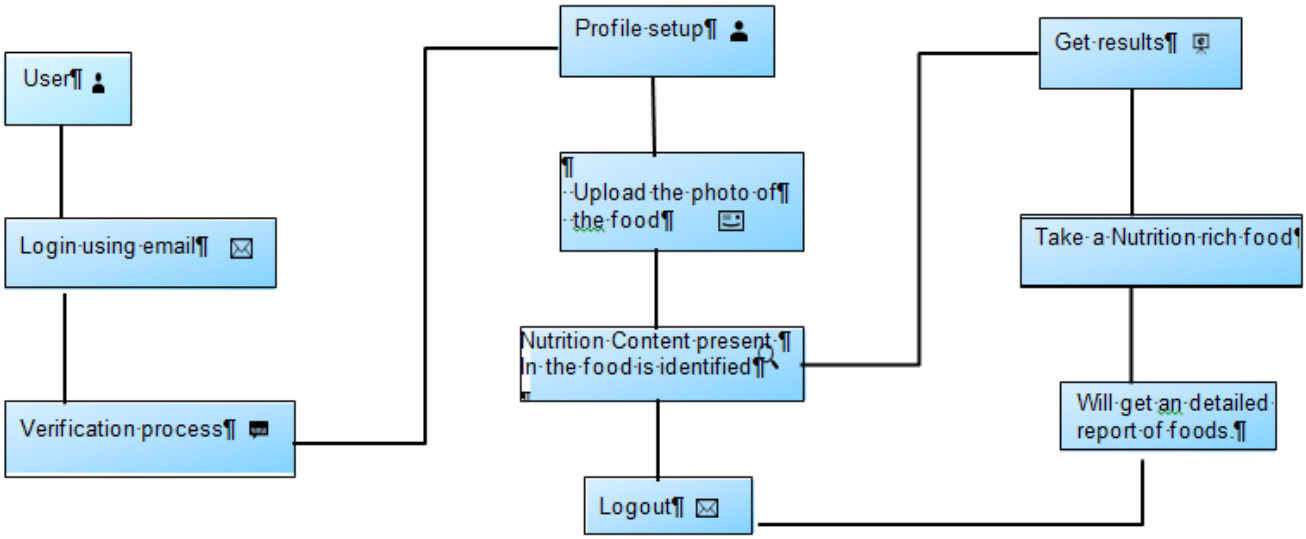
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The webpage will be designed in such a way that any non-technical user can easily navigate through it. (easy and simple design)
NFR-2	**Security**	Using of python flask to cloud connect will provide security to the project. Database will be safely stored in DB2.
NFR-3	**Reliability**	To make sure the application doesn't go down due to network traffic.
NFR-4	**Performance**	Focus on loading the application as quickly as possible irrespective of the number of user/integrator traffic.
NFR-5	**Availability**	The application will be available to all users (network connectivity is necessary) at any given point of time.
NFR-6	**Scalability**	Increasing the storage space of database can increase the number of users. Add some features in future to make the webpage unique and attractive.

5.Project Design:

5.1 Data Flow Diagram :

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored



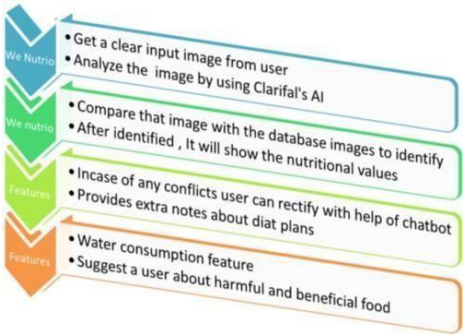
5.2 Solution and Technical Architecture

Solution Architecture:

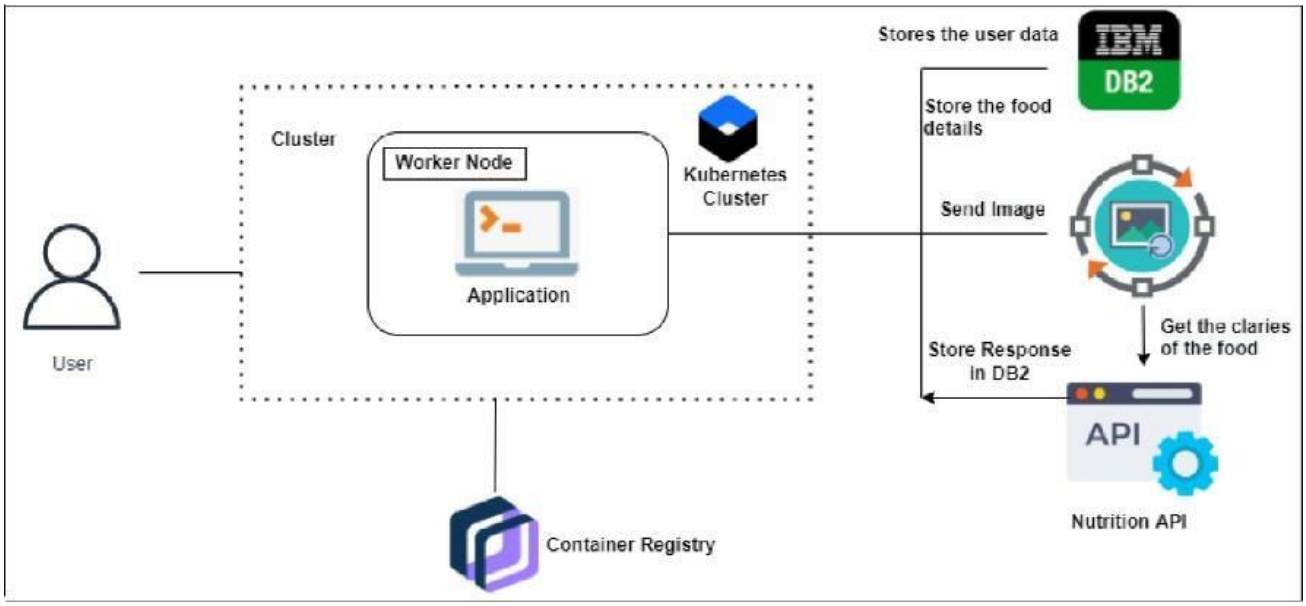
PROJECT DESCRIPTION:

Due to the ignorance of healthy food habits, obesity rates are increasing and alarming speed, and this is reflective of the risks to people's health. People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity. However,although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people to refer to App-based nutrient dashboard systems which can analyze real-time images of a meal and analyze it for nutritional content which can be very handy and improves the dietary habits, and therefore, helps in maintaining a healthy lifestyle .This project aims at building a web App that automatically estimates food attributes such as ingredients and nutritional value by classifying the input image of

food. Our method employs Clarifai's AI-Driven Food Detection Model for accurate foodidentification and Food API's to give thenutritional value of the identified food.



Technical Architecture:



SOLUTION:

- User interacts with the Web App to Load an image.
- The image is passed to the server application, which uses Clarifai's AI-Driven Food Detection.
- Model Service to analyze the images and Nutrition API to provide nutritional information about the analyzed Image

> Nutritional information of the analyzed image is returned to the app for display.

PROCEDURE:

1. IMPLEMENTING WEB APPLICATION

- Registration (Push the registration data into the database)
- Login (Fetch the data upon login)
- Upload the food image and get the prediction
- Get Calories from the food items
- Add food data to the database

2. CREATE UI TO INTERACT WITH THE APPLICATION

- Registration Page
- Login Page
- Upload Image page 15
- Prediction results page for food items
- View history of items

3. CREATE IBM DB2 AND CONNECT WITH PYTHON

- Create the IBM Db2 service in the IBM cloud and connect thepythoncode with DB.

4. INTEGRATE NUTRITION API

- Integrate the Nutrition API to the flask with API call.

APPROACH:

KUBERNETES CLUSTERS - Kubernetes clusters allow containers to run across multiple machines and cloud based application. IBM DB2- Used for Backup & recovery. Comprehensive data resilience for physical and virtual servers. Cloud hosting. Dedicated, virtual private, and bare metal server options

CONTAINER REGISTRY - Container Registry is a single place for your team to manage Docker images, perform vulnerability analysis, and decide who can access what with fine-grained access control

NUTRITION API - A nutrition API acts as a container for information from thousands of products. When an application sends a GET request to the API, it returns the nutrition

information about a given product.

RESULT:

Despite processing, we do not believe that our outcomes are flawless. There is always opportunity for improvement in your procedure becausecloudcomputing is a topic that is constantly developing. Additionally, therewillalways be new approaches that offer better results for the same problems. It hasbeen done, the application. Clarifai's AI-Driven Food Detection Model Service, Nutrition API.

5.3 User Stories

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	Registration	USN-1	As a user, I can register for the application by entering my name, age, gender, e-mail, password and confirming my password	I can access my account / dashboard	High	Sprint-1
	Registration	USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	Medium	Sprint-1
	Profile Updating	USN-3	As a user, I have to enter my height, weight and daily activity details	I can update this information on dashboard	High	Sprint-1
	Login	USN-4	As a user, I can login to the application through Gmail with login credentials	I can access my account / dashboard	Medium	Sprint-2
	Database	USN-5	As a user, I can upload or capture live image of the meal	I can get the nutritional value of that particular meal	High	Sprint-2
	Dashboard	USN-6	As a user, I can track my daily calories intake	I can access my account / dashboard	Medium	Sprint-2
Administrator	Maintaining details for users	USN-7	Maintaining details for users	I can access database	High	Sprint-3
	Security	USN-8	As a user, I feel the site is very secure	I can access my account with my login credentials	High	Sprint-3

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning and Estimation:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	UI Creation Creating Registration page, Login page	10	Medium	S.Muthu Kamatchi B. R. Deepak NIranjan A. Dinesh Kannan R. Nishanth
Sprint-1	Database Connectivity	USN-2	Uploading Images to the Nutrition API, Connecting UI with Database	10	High	S.Muthu Kamatchi B. R. Deepak NIranjan
Sprint-2	SendGrid Integration	USN-3	SendGrid Integration with Python Code	10	Low	A. Dinesh Kannan R. Nishanth
Sprint-2	Nutrition API Acount Creation	USN-4	Create A Account In Nutrition API	10	High	S.Muthu Kamatchi B. R. Deepak NIranjan
Sprint-3	Integration and Containerisation	USN-5	Integrating Nutrition API to the HTML page andcontainerizing the application	20	Medium	S.Muthu Kamatchi B. R. Deepak NIranjan A. Dinesh Kannan R. Nishanth
Sprint-4	Upload Image anddeployment	USN-6	Upload the image to the IBM Registry and deploy it in the Kubernetes Cluster.	20	High	A. Dinesh Kannan R. Nishanth

6.2 Sprint Delivery Schedule:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022		
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022		
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022		

VELOCITY:

Imagine we have a 10-day sprint duration, and the velocity of theteam20(points per sprint).Let's calculate the team's average velocity (AV) periteration unit.

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

7. CODING & SOLUTIONING

7.1 Feature 1

Nutrition Assistant Application:

Description:

In this feature I have designed a webpage to analyze the nutritional food and health. The user has register, if they haven't the Id .The user have to login the webpage using username and password. After successful login, the user will be redirected to the home page. In this form, Users are asked to fill the body health details and the food details. After entering the appropriate details the nutritional result will be displayed.

Algorithm:

1. Enter the credentials and hit enter (email and password).
2. If already logged in user is taken to home page
3. Else , check for validity of credentials entered using query to cloudant db.
4. If wrong credentials entered , notification displayed to user and user stays in login page.
5. On correct credentials , user is taken to home page.

Home PAGE

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Nutrition Assistant Application</title>
  <style>
  nav
  {
    background-color: black;
    color: white;

  }
  h2
  {
    font-size: 30px;
    top: 40%;
  }
  .a1
```

```
    {
        color: white;
        font-size: 20px;
        position: absolute;
        left: 75%;
        top: 11%;
    }
    .a2
    {
        color: white;
        font-size: 20px;
        position: absolute;
        left: 80%;
        top: 11%;
    }
    .a3
    {
        color: white;
        font-size: 20px;
        position: absolute;
        left: 85%;
        top: 11%;
    }
    .a4
    {
        color: white;
        font-size: 20px;
        position: absolute;
        left: 92%;
        top: 11%;
    }
    p
    {
        font-size: 40px;
        position: absolute;
        top: 40%;
        left: 3%;
    }
    .img2
    {
        position: absolute;
        width: 300px;
        top: 10%;
        left: 4%;
    }
    </style>
</head>
<body>
    <img class="img2" src="assets/image/vegr.png" alt="">
    <p>Try to eat a variety of foods to get different vitamins and minerals.
        <br>Foods that naturally are nutrient-rich include fruits and vegetables.
```

```
      <br>Lean meats, fish, whole grains, dairy, legumes, nuts, and seeds also are high in nutrients.</p>
    <nav class="nav">
      <h2>WELCOME !!</h2>
      <a class="a1" href="home.html">Home</a>     
      <a class="a2" href="login.html">Login</a>     
      <!-- <a class="a3" href="register.html">Register</a>      -->
      <!-- <a class="a4" href="photo.html">Upload</a> -->
    </nav>
</body>
</html>
```

lOGIN PAGE

```
<!DOCTYPE html>
<!---->
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Nutrition Assistant Application</title>

    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <!-- ===== Iconscout CSS ===== -->
    <link rel="stylesheet" href="https://unicons.iconscout.com/release/v4.0.0/css/line.css">

    <!-- ===== CSS ===== -->
    <link rel="stylesheet" href="assets/css/style2.css">

    <!--<title>Login & Registration Form</title>-->
</head>
<body>
    <div class="container">
        <div class="forms">
            <div class="form login">
                <span class="title">Login</span>

                <form action="#">
                    <div class="input-field">
                        <input type="text" placeholder="Enter your email" required>
                        <i class="uil uil-envelope icon"></i>
                    </div>
                    <div class="input-field">
                        <input type="password" class="password" placeholder="Enter your password" required>
                        <i class="uil uil-lock icon"></i>
                        <i class="uil uil-eye-slash showHidePw"></i>
                    </div>

                    <div class="checkbox-text">
                        <div class="checkbox-content">
                            <input type="checkbox" id="logCheck">
```

```
            <label for="logCheck" class="text">Remember me</label>
          </div>

          <a href="#" class="text">Forgot password?</a>
        </div>
       <a href="uploadimage.html">
        <div class="input-field button">
          <input type="button" value="Login"  onclick="onboard.html">
        </div>
    </a>
    </form>

    <div class="login-signup">
      <span class="text">Not a member?
        <a href="Registration.html" class="text signup-link">Signup Now</a>
      </span>
    </div>
</div>

<!-- Registration Form -->
<div class="form signup">
    <span class="title">Registration</span>

    <form action="#">
      <div class="input-field">
        <input type="text" placeholder="Enter your name" required>
        <i class="uil uil-user"></i>
      </div>
      <div class="input-field">
        <input type="text" placeholder="Enter your email" required>
        <i class="uil uil-envelope icon"></i>
      </div>
      <div class="input-field">
        <input type="password" class="password" placeholder="Create a password" required>
        <i class="uil uil-lock icon"></i>
      </div>
      <div class="input-field">
        <input type="password" class="password" placeholder="Confirm a password" required>
        <i class="uil uil-lock icon"></i>
        <i class="uil uil-eye-slash showHidePw"></i>
      </div>

      <div class="checkbox-text">
        <div class="checkbox-content">
          <input type="checkbox" id="termCon">
          <label for="termCon" class="text">I accepted all terms and conditions</label>
        </div>
      </div>

      <div class="input-field button">
```

```
            <input type="button" value="Signup">
          </div>
        </form>

        <div class="login-signup">
          <span class="text">Already a member?
            <a href="#" class="text login-link">Login Now</a>
          </span>
        </div>
      </div>
    </div>
  </div>

</body>
</html>
```

Registration PAGE

```
<!DOCTYPE html>
<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Nutrition Assistant Application</title>


  <!-- ===== Iconscout CSS ===== -->
  <link rel="stylesheet" href="https://unicons.iconscout.com/release/v4.0.0/css/line.css">

  <!-- ===== CSS ===== -->
  <link rel="stylesheet" href="assets/css/style2.css">
  <body>
    <div class="form signup">
      <div class="container">

        <span class="title"><h3>

         Register now!!1</h3></span>

        <form action="#">
          <div class="input-field">
            <input type="text" placeholder="Enter your name" required>
            <i class="uil uil-user"></i>
          </div>
          <div class="input-field">
            <input type="text" placeholder="Enter your email" required>
            <i class="uil uil-envelope icon"></i>
          </div>
          <div class="input-field">
            <input type="password" class="password" placeholder="Create a password" required>
            <i class="uil uil-lock icon"></i>
          </div>
```

```
            <div class="input-field">
               <input type="password" class="password" placeholder="Confirm a password" required>
               <i class="uil uil-lock icon"></i>
               <i class="uil uil-eye-slash showHidePw"></i>
            </div>


            <div class="checkbox-text">
               <div class="checkbox-content">
                  <input type="checkbox" id="termCon">
                  <label for="termCon" class="text">I accepted all terms and conditions</label>
               </div>
            </div>

            <div class="input-field button">
              <a href="login.html" > <input type="button" value="Signup"></a>
            </div>

         </form>

         <div class="login-signup">
            <span class="text">Already a member?
               <a href="login.html" class="text login-link">Login Now</a>
            </span>
         </div>
         </div>


      </div>
   </body>
 </head>
```

UploadImage PAGE

```
<!DOCTYPE html>
<html>
<head>
   <title>Nutrition Assistant Application</title>

  <style>
    nav
  {
     background-color: black;
     color: white;

  }
  input[type=file]
  {
    width: 20%;
    color: white;

 padding: 5px 5px;
```

```
margin: 5px 0 22px 0;
display: inline-block;
border: 1px solid rgb(0, 0, 0);
background: #0d397c;
 }
 input[type=submit]
 {
   width: 10%;
   color: white;
   position: absolute;
   top: 50%;
   left: 22%;
padding: 5px 5px;
margin: 5px 0 22px 0;
display: inline-block;
border-radius: 20px;
    box-shadow: 0px 2px 2px 2px gray;
background: black;
 }
 .file-upload-input
 {
    font-weight: bold;
    color: white;
    width: 100px;
    position: absolute;
  top: 40%;
  left: 21%;
    background-color: #0d397c;
    border: 2px solid black;
    padding: 8px 34px;
    cursor: pointer;
    border-radius: 20px;
    box-shadow: 0px 2px 2px 2px gray;
 }
 h2
 {
    font-size: 30px;
    top: 40%;
 }
 .a1
 {
    color: white;
    font-size: 20px;
    position: absolute;
    left: 75%;
    top: 11%;
 }
 .a2
 {
    color: white;
    font-size: 20px;
```

```
      position: absolute;
      left: 80%;
      top: 11%;
    }
    .a3
    {
      color: white;
      font-size: 20px;
      position: absolute;
      left: 85%;
      top: 11%;
    }
    .a4
    {
      color: white;
      font-size: 20px;
      position: absolute;
      left: 92%;
      top: 11%;
    }
    select
    {
      position: absolute;
      top: 43%;
      left: 70%;
      transform: translate(-50%, -50%);
      appearance: none;
      width: 150px;
      height: 35px;
      padding: 6px 10px;
      color: white;
      background-color: #0d397c;
      box-shadow: 0px 2px 2px 2px gray;
      border: 2px solid black;
      background-image: url("assets/image/arrow1.jpg");
      background-repeat: no-repeat;
      background-size: 30px;
      background-position: 115px 0;

    }
    h1
    {
      font-size: 50px;
      position: absolute;
      top: 20%;
      left: 10%;
    }
    </style>
  </head>
  <body>
     <nav class="nav">
```

```
        <h2>WELCOME !!</h2>
        <a class="a1" href="home.html">Home</a>     
        <a class="a2" href="login.html">Login</a>     
        <a class="a3" href="history.html">History</a>     
        <!-- <a class="a4" href="photo.html">Upload</a> -->
      </nav>
      <h3>Here are tow option to find the Nutrition Present in the Food <br> one is simply Upload images by clciking Upload button <br> Another way is that choose any option given below in the Drop Down List</h3>
    <input id="imgupload" type="file" onchange="readURL(this)" accept="image/*" name="imgupload" style="display:none;"><label for="imgupload" class="file-upload-input"><i></i>    UPLOAD</label>
    <a href="apple.html">
      <input type="Submit" name="Submit" value="Submit">
    </a>
    <select name="fruites" id="fruites" onchange="fruit(this.value)">
     <option disabled selected>Choose</option>
     <option value="banana.html">Banana</option>
     <option value="apple.html">Apple</option>
     <option value="mango.html">Mango</option>
     <option value="guava.html">Guava</option>
   </select>
   <!-- <p>Choose By select the Text</p> -->
    <script>
     function fruit(src)
     {
        window.location=src;
     }
    </script>
</body>
</html>
```

History page

```
<!DOCTYPE html>
<html lang="en">
<head>
   <meta charset="UTF-8">
   <meta http-equiv="X-UA-Compatible" content="IE=edge">
   <meta name="viewport" content="width=device-width, initial-scale=1.0">
   <title>Nutrition Assistant Application</title>
   <style>
      button {
  background-color: BLACK;
  color: white;
  padding: 14px 20px;
  margin: 8px 0;
  position: absolute;
  top: 1%;
  left: 3%;
  border: none;
  border-radius: 20px;
      box-shadow: 0px 2px 2px 2px gray;
}
```

```
.button:hover {
  opacity: 0.8;
}
      table
      {
         position: absolute;
         top: 28%;
         left: 30%;
         width: 600px;
         height: 300px;
         border: 2px solid black;
         background-color: white;
      }
      th
      {
         padding: 1px;
         color: white;
         font-family: sans-serif;
         font-size: 22px;
         background-color: black;
         border: 1px solid black;
      }
      td
      {
         font-family: sans-serif;
         font-size: 20px;
         background-color: white;
         padding: 5px;
         border: 1px solid black;
         color: black;
      }
      h1
      {
         position: absolute;
         top: 7%;
      }
   </style>
</head>
<body>
   <h1>Details of the food You Choosen</h1>
   <br>
   <a href="uploadimage.html">
      <button>back</button>
   </a>
   <table>
      <tr class="one">
         <th>Fruit Name</th>
         <th>Calories</th>
         <th>Fiber</th>
         <th>Sugar</th>
```

```
      <th>Protein</th>
      <th>Potassium</th>
    </tr>
    <tr>
      <td>Apple</td>
      <td>95g</td>
      <td>3g</td>
      <td>19g</td>
      <td>1g</td>
      <td>2g</td>
    </tr>
    <tr>
      <td>Banana</td>
      <td>110g</td>
      <td>3g</td>
      <td>15g</td>
      <td>1g</td>
      <td>450 mg</td>
    </tr>
    <tr>
      <td>Apple</td>
      <td>95g</td>
      <td>3g</td>
      <td>19g</td>
      <td>1g</td>
      <td>2g</td>
    </tr>
    <tr>
      <td>Mango</td>
      <td>107g</td>
      <td>3g</td>
      <td>24g</td>
      <td>1g</td>
      <td>257 mg</td>
    </tr>
    <tr>
      <td>Guava</td>
      <td>37g</td>
      <td>3g</td>
      <td>5g</td>
      <td>1g</td>
      <td>321 mg</td>
    </tr>
  </table>
</body>
</html>
```

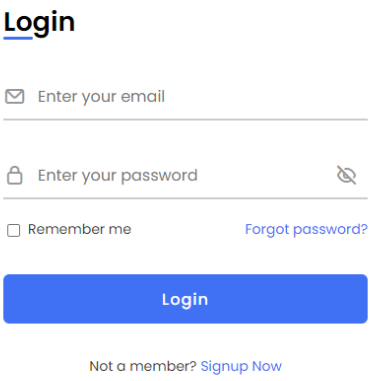
Home Page

WELCOME !!

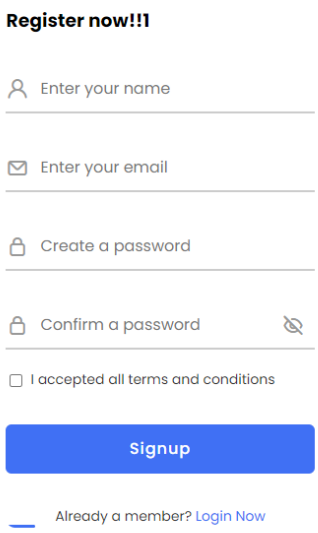
Home Login

Try to eat a variety of foods to get different vitamins and minerals.
Foods that naturally are nutrient-rich include fruits and vegetables.
Lean meats, fish, whole grains, dairy, legumes, nuts, and seeds also are high in nutrients.

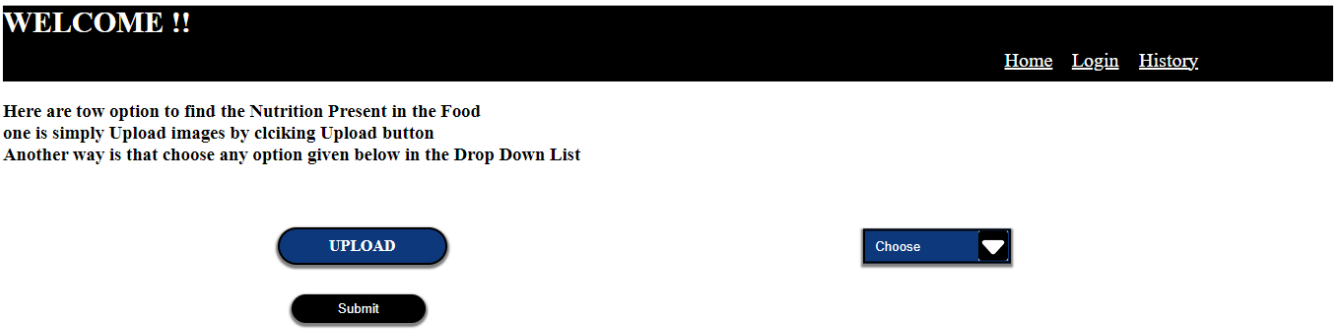
Login Page



Registeration Page



Upload Page



NutritionDetails Page

back

Nutritions Present in the Apple....

Source Of. One serving, or one medium apple,
provides about
95 calories,
0 gram fat,
1 gram protein,
25 grams carbohydrate,
19 grams sugar (naturally occurring), and 3 grams fiber.

History Page

back

Details of the food You Choosen

Fruit Name	Calories	Fiber	Sugar	Protein	Potassium
Apple	95g	3g	19g	1g	2g
Banana	110g	3g	15g	1g	450 mg
Apple	95g	3g	19g	1g	2g
Mango	107g	3g	24g	1g	257 mg
Guava	37g	3g	5g	1g	321 mg

7.2 Feature 2 : Sign up

Algorithm :

1. Enter the signup form fields (name , email , password , re-enter password , date of birth) and hit enter.

2. All credentials are validated at client side.

3. Email is checked if already registered or not in the database.

4. If already registered , notification displayed. Or else, the user is taken to the successful signup

page.

FEATURE 3: HOME

Algorithm:

1. If the user is logged out , he/she is taken to the login page.

2. Home page buttons are displayed (Live tracker , Recent emergency notifications , Location history , Change password , Logout)

3. If buttons are clicked , the user is taken to the requested page

TESTING

TEST CASES:

1. Login button click with wrong credentials entered.

2. Signup with already registered mail ID.

3. Signup with wrong form data entered.

4. Entering home page with logged out session.

5. Clicking home page buttons with logged out session.

6. Invalid data entered in change password page and requested for change in password.

8.2 USER ACCEPTANCE TESTING

S.NO	TEST CASE	REQUIRED OUTPUT	RESULT OUTPUT	STATUS
1	Login button click with wrong credentials	Wrong credentials entered notification	Wrong credentials entered notification	ACCEPTED
2	Signup with already registered mail ID.	Email already registered notification	Email already registered notification	ACCEPTED
3	Signup with wrong form data entered.	Wrong credentials entered notification	Wrong credentials entered notification	ACCEPTED
4	Entering home page with logged out session.	Take user to login page	Take user to login page	ACCEPTED
5	Clicking home page buttons with logged out session.	Take user to login page	Take user to login page	ACCEPTED
6	Invalid data entered in change password page and requested for change in password.	Wrong form data entered notification	Wrong form data entered notification	ACCEPTED

RESULTS

PERFORMANCE METRICS:

1. Planned value : Rs.4000
2. Actual value : Rs.1300
3. Hours worked : 50 hours
4. Stick to Timelines : 100%
5. Stay within budget : 100%
6. Consistency of the product : 75%
7. Efficiency of the product : 80%
8. Quality of the product : 80%

ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

1. Low cost.
2. Simple UI
3. Faster response due to single page web page.
4. Capability of adding many features with ease and less cost.

DISADVANTAGES:

1. Lack of efficiency.
2. Efficiency of the product needs to be improved.
3. Consistency of the product is not 100%.
4. Not a compact sized product. Size needs

CONCLUSION :

Dietary tracking is an essential task in chronic disease management and intervention. Food photo taking and image recognition significantly reduce the burden of food entering on personal mobile devices. In this work, we have developed a dietary tracking system that applies the deep-based image recognition to accurately and efficiently log food and nutrition intake. Through real user food photo testing and user study, we found that laboratory models form the foundation of the solution but miss out some of the key challenges. The diversity of real food photos is higher than the lab trained model.

An ingredient-based recognition is a promising way of tracking the free style and homemade food recognition problems in which training data is sparse and not representative.

Moreover, the proposed photo based portion selection method is shown to be more accurate and engages the users better than the existing methods.

FUTURE SCOPE:

In future we'll be adding more features which will benefit the users. The ui/ux of the web application will be improved. Scaling the project for more use cases and customers. Implementing distributed computing for efficient processing.Making encryption standard for cloud storage.

SOURCE CODE LINK :

https://github.com/IBM-EPBL/IBM-Project-27316-1660054000

DEMO VIDEO LINK:

https://www.youtube.com/watch?v=7On6oVXkhy8