

# **Nutrition Assistant Application**

## **PROJECT REPORT**

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*in*

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**SRI KRISHNA COLLEGE OF ENGINEERING AND**

**TECHNOLOGY COIMBATORE**

**(An Autonomous Institution)**



**ANNA UNIVERSITY: CHENNAI**

**MAY 2022**

# **SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(An Autonomous Institution)**

**(Approved by AICTE and Affiliated to Anna University, Chennai)**

**ACCREDITED BY NAAC WITH “A” GRADE**

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Certified that this project report titled **“Nutrition Assistant Application”** is the bonafide work of **SNEHA M.G (20EUCS507), MRIDULA K (19EUCS094), MOHANAPRIYA (19EUCS092), HARIRAJA (19EUCS034)** who carried out the project work under my supervision.

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**This project report is submitted for the Autonomous Pro5ject Viva-Voce examination held on .....**

**INTERNAL EXAMINER**

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# **1. INTRODUCTION**

Chronic diseases such as diabetes, obesity, and cardiovascular diseases are becoming the dominant sources of mortality and morbidity worldwide and recently an epidemic in many Asia Pacific countries. Unhealthy diet is one of the key common modifiable risk factors in preventing and managing chronic diseases. Personalized dietary intake intervention showed significant impact on influencing people's choice and promoting their health. The feedback on nutrition intake is substantial and behavioural changing when patients track their dietary intake for a considerable length of time. However, the burden of logging food makes compliance a challenge. Clinical studies rely on patients to recall dietary intake, which is time-consuming and prone to underestimation

## **1.1 PROJECT OVERVIEW**

Tracking dietary intake is an important task for health management especially for chronic diseases such as obesity, diabetes, and cardiovascular diseases. Given the popularity of personal handheld devices, mobile applications provide a promising low-cost solution to tackle the key risk factor by diet monitoring. In this work, we propose a photo based dietary tracking system that employs deep-based image recognition algorithms to recognize food and analyze nutrition. The system is beneficial for patients to manage their dietary and nutrition intake, and for the medical institutions to intervene and treat the chronic diseases. To the best of our knowledge, there are no popular applications in the market that provide a high-performance food photo recognition like ours, which is more convenient and intuitive to enter food than textual typing.

## **1.2 PURPOSE**

Experiments on evaluating the recognition accuracy on laboratory data and real user data on food, which shed light on uplifting lab trained image recognition

models in real applications. We have also conducted user study to verify that our proposed method has the potential to foster higher user engagement rate as compared to existing apps based dietary tracking approaches.



## **2. LITERATURE SURVEY**

### **2.1 EXISTING PROBLEM**

With the rapid development of smart computing and Internet of Things (IoT), now we have a huge amount of data from social networks and mobile networks everyday. People keep uploading, sharing and recording what they do everyday in case of missing the chance of using them to improve our daily life. Food images, recipes and food diaries become the most popular information to be shared, we can learn the implication to build an automatic nutrition analysis system by taking the advantage of such large-scale datasets. With the help of food recognition and analysis systems, users are able to record their daily meals and assess dietary habits, as well as promote their health.

### **2.2 REFERENCES**

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## 2.3 PROBLEM STATEMENT DEFINITION

This is based on the propose of a deep learning based system for food item detection and analyze the nutrition components of each meal image. Our model consists of three main steps.

We first extract the regions of interests (ROIs) by applying the Region Proposal Network derived from the Faster R-CNN model. The ROIs would help to separate the food items from the background, and improve the detection model efficiency

The second step is to apply a well designed Convolutional Neural Network (CNN) on selected RoIs and classify them into different food item categories. Meanwhile, a regression module is also used to locate the food coordinates in the image.

The final step is to use modern technology-based dietary assessment tools for food nutrition analysis and generate a health report for users based on their meal images.

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	a student	I'm trying to reduce my weight.	I'm unaware about the food habits.	There are so many types of diets to follow	Confused
PS-2	a pregnant women	To follow a proper food diet.	I'm not sure on what to have and what not to.	There are so many foods that seem to be healthy but actually not.	Unclear
PS-3	a student	reduce my weight as I have PCOS.	I'm not sure what diet to follow	I don't know what type of food should be consumed by me	Frustrated
PS-4	a diabetic patient	get a clear idea on the food habits for me.	but i dont know where to gain the knowledge about it.	There are so resourses for nutrition health but no clear idea.	Confused

**FIG 2.1 PROBLEM STATEMENT DEFINITION**

I am a student	I'm trying to I'm trying to reduce my weight.	But I'm unaware about the food habits.	Because There are so many types of diets to follow	Which makes me feel Confused
I am a student	I'm trying to a pregnant women	But To follow a proper food diet.	Because I'm not sure on what to have and what not to.	Which makes me feel Unclear
I am a student	I'm trying to reduce my weight as I have PCOS.	But I'm not sure what diet to follow	Because I don't know what type of food I should be consumed by me	Which makes me feel Frustrated
I am a diabetic patient	I'm trying to get a clear idea on the food habits for me.	But get a clear idea on the food habits for me.	Because There are no resources for nutrition health but no clear idea	Which makes me feel Confused

**FIG 2.1 PROBLEM STATEMENT DEFINITION**

### 3. IDEATION AND PROPOSED SYSTEM

#### 3.1 EMPATHY MAP CANVAS

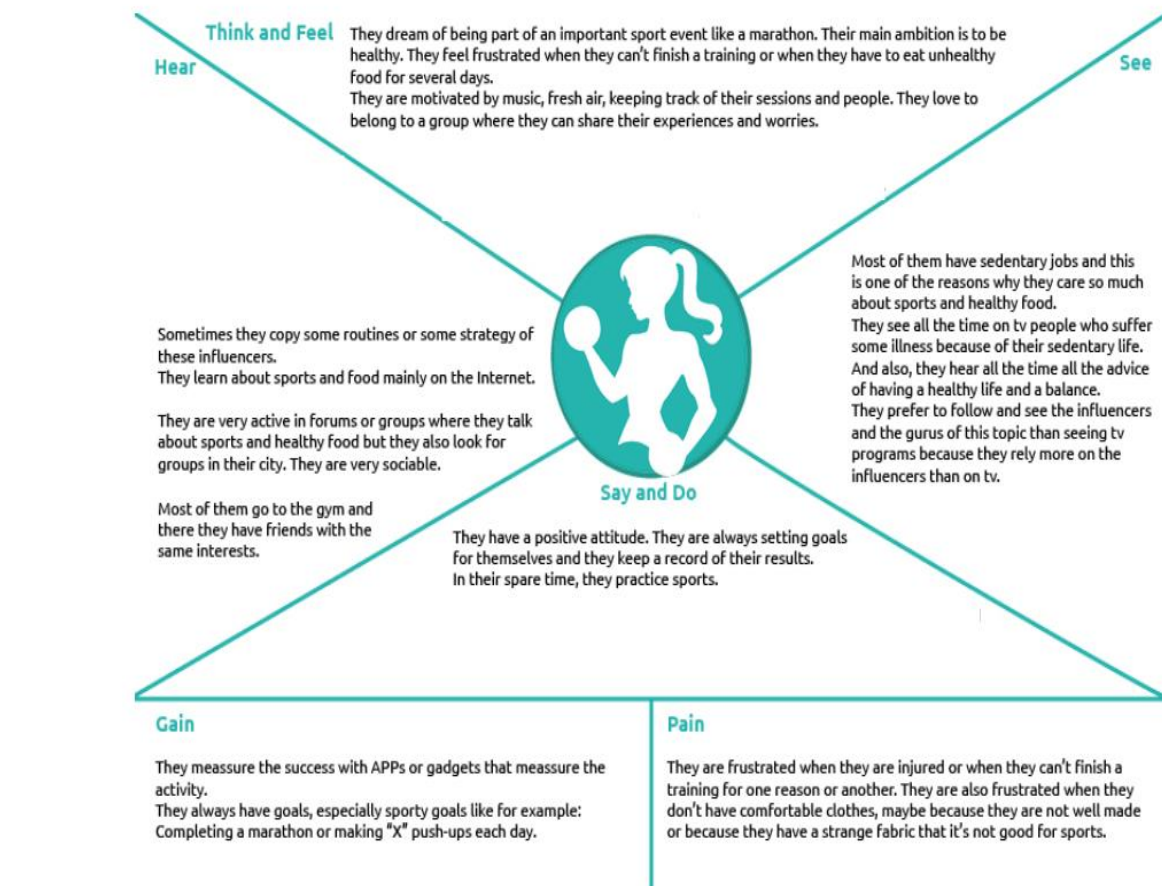
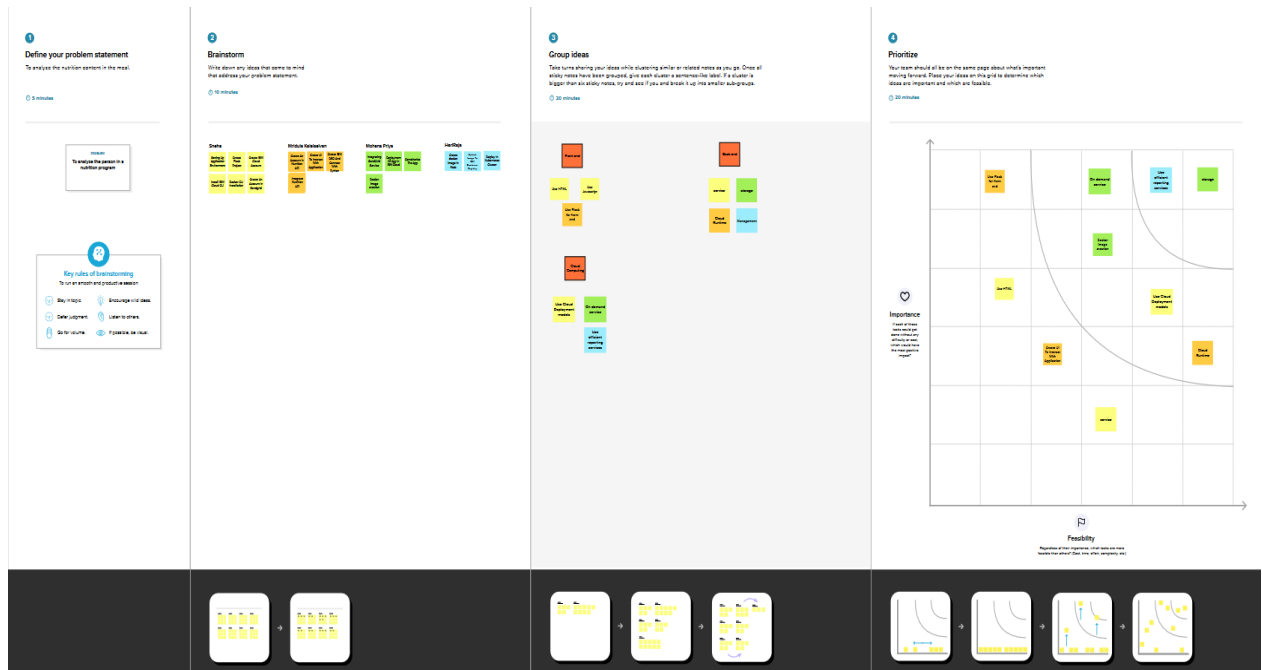


FIG 3.1 EMPATHY MAP

## 3.2 IDEATION AND BRAINSTORMING



### FIG 3.2 IDEATION AND BRAINSTORMING

### 3.3 PROPOSED SOLUTION

### 3.3.1 PROBLEM STATEMENT (PROBLEM TO BE SOLVED)

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.

### 3.3.2 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 for accurate food identification and Food API's to give the nutritional value of the identified food

### **3.3.3 NOVELTY / UNIQUENESS**

In this project, 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.

### **3.3.4 SOCIAL IMPACT / CUSTOMER SATISFACTION**

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 life.

### **3.3.5 BUSINESS MODEL (REVENUE MODEL)**

A revenue model means understanding how a startup can make money. Our major revenue sources consist of sales, government funds, and public donations. The introduction of novel ideas increases revenue streams, such as special dietary needs, Clarifai's AI-Driven Food Detection Model, Food API's to give the nutritional value etc.

### **3.3.6 SCALABILITY OF THE SOLUTION**

Making use of cloud-native techniques is one way to automatically estimates food

attributes such as ingredients and nutritional value by classifying the input image of food. IBM Cloud, for instance, is one of the cloud-based AI scalability options. Run and manage AI models, as well as optimise decisions at scale across any cloud, with the aid of IBM Cloud Build. The benefit of using the cloud to scale solutions is that we can install our AI programme there. the specific cloud environment that best supports our business needs. We can take advantage of built-in security capabilities and AI model monitoring. we can drive better business outcomes by optimizing our decisions and also make our solution scalable using cloud.

### **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.

#### **3.4.1 PURPOSE**

- Solve complex problems in a way that fits the state of your customers.
- Succeed faster and increase your solution adoption by tapping into existing mediums and channels of behavior.
- Sharpen your communication and marketing strategy with the right triggers and messaging.
- Increase touch-points with your company by finding the right problem-behavior fit and building trust by solving frequent annoyances, or urgent or costly problems.
- Understand the existing situation in order to improve it for your target group.



Problem-Solution fit canvas 2.0		Purpose / Vision	
Define CS, fit into CC	<b>1. CUSTOMER SEGMENT(S)</b> <span>CS</span> Who is your customer? i.e. working parents of 0-5 y.o. kids 1. General people 2. People with health issues 3. Elderly old people	<b>6. CUSTOMER CONSTRAINTS</b> <span>CC</span> 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 Nutrition Assistance Application 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.	<b>5. AVAILABLE SOLUTIONS</b> <span>AS</span> 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 do these solutions have? i.e. pen and paper is an alternative to digital notetaking 1. Checking the food label. 2. Paid to Nutrition expert.
	<b>2. JOBS-TO-BE-DONE / PROBLEMS</b> <span>J&amp;P</span> Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides. The 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.	<b>9. PROBLEM ROOT CAUSE</b> <span>RC</span> 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. People who are more consent about their health 1. To identify the nutritional value of the food.	<b>7. BEHAVIOUR</b> <span>BE</span> 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) 1. Analyze real-time images of a meal and analyze it for nutritional content which can be very handy and improves the dietary habits,
<b>3. TRIGGERS</b> <span>TR</span> What triggers customers to act? i.e. seeing their neighbour installing solar panels; reading about a more efficient solution in the news. Nutritionist are the main motivation for the people to maintain and develop their healthy lifestyle,	<b>10. YOUR SOLUTION</b> <span>SL</span> 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 in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour. Our solution is to 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.	<b>8. CHANNELS of BEHAVIOUR</b> <span>CH</span> <b>8.1 ONLINE</b> What kind of actions do customers take online? Extract online channels from #7 1. Talk to friends, relatives, 2. Read blog <b>8.2 OFFLINE</b> What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development. 1. Reach out Nutrition experts. 2. Search for books about the food and nutrition	Focus on J&P, tap into BE, understand RC
<b>4. EMOTIONS: BEFORE / AFTER</b> <span>EM</span> 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. Before using the application people will be anxious. After the usage people will be motivated to follow the healthy lifestyle.	Identify strong TR & EM	Extract online & offline CH of BE	

Problem-Solution fit canvas is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 license  
 Created by Daria Nęprukhina / Amaltama.com

**AMALTAMA**

**FIG 3.1 PROBLEM SOLUTION FIT**

## **4. REQUIREMENT ANALYSIS**

### **4.1 FUNCTIONAL REQUIREMENTS**

- Users have to register their personal details.
- User has to upload the image of the food
- The nutritional values of the food will be displayed

### **4.2 NON-FUNCTIONAL REQUIREMENTS**

#### **4.2.1 PERFORMANCE**

Performance is measured in terms of the output provided by the application. Requirement specification plays an important part in the analysis of a system. Only when the requirement specifications are properly given, it is possible to design an application, which will fit into the required environment. The load for the user interface screens shall take no longer than 2 seconds. The login information shall be verified within 5 seconds. Queries shall return results within 5 seconds.

#### **4.2.2 SAFETY AND SECURITY REQUIREMENTS**

- User Identification:

The system requires the user to identify himself/herself User

- Login ID:

Any user who uses the system shall have a Login.

- Modification:

Any modification (insert, delete (or) update) for the Database shall be synchronized and done only by the admin in the ward.

- Admin Rights:

Admin shall be able to view and modify the information.

## 5. PROJECT DESIGN

### 5.1 DATA FLOW DIAGRAMS

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.

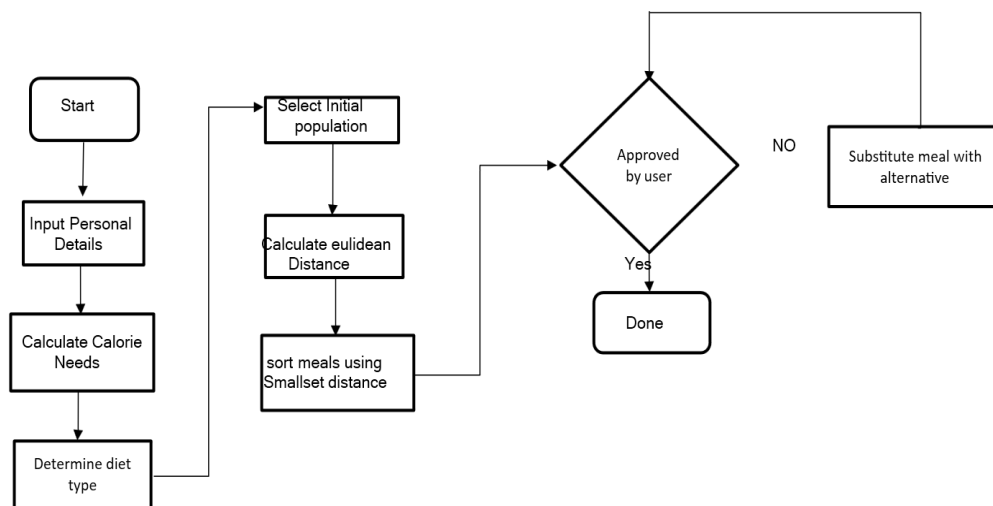


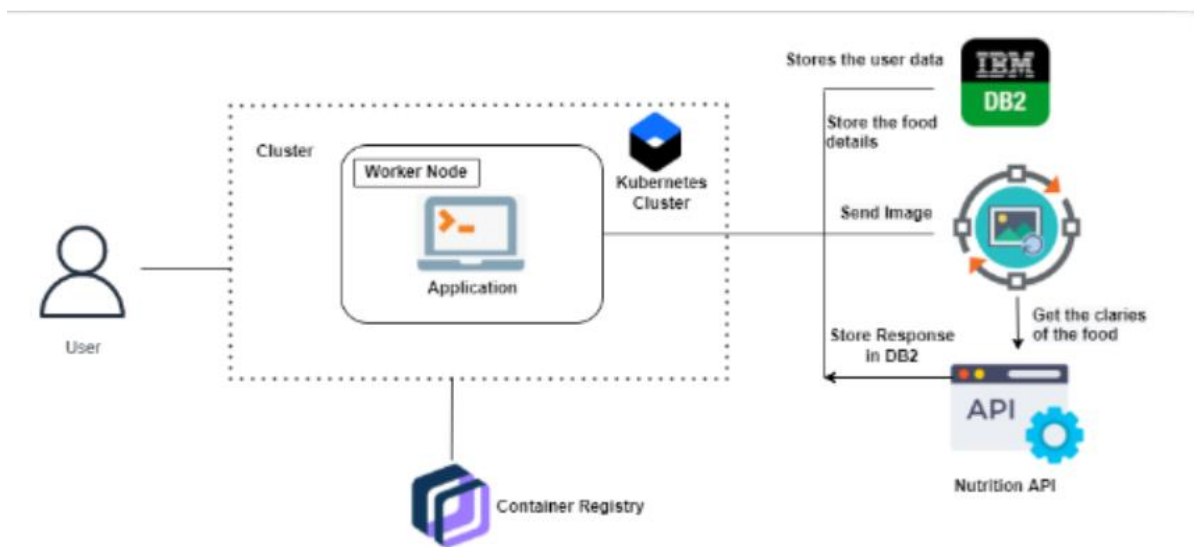
FIG 5.1 DATA FLOW DIAGRAMS

### 5.2 SOLUTION AND TECHNICAL ARCHITECTURE

#### PROJECT DESCRIPTION

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. 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 food identification and Food API's to give the nutritional value of the identified food.



**FIG 5.2 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
- 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 the python code with DB.

### **4. INTEGRATE NUTRITION API**

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

## **APPROACH**

Nutrition assistant application is designed to compress the broad knowledge that exists in nutrition, Many people will be attracted to Nutrition because they have special dietary needs. Some had food allergies or sensitivities;

others were vegan or vegetarian; many were pregnant. A number of pregnant women reached out to us asking for more detailed information and guidance.

**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 because cloud computing is a topic that is constantly developing. Additionally, there will always be new approaches that offer better results for the same problems. It has been 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
Visitor	Registration	USN-1	As an initial visitor, I want to see what the application is about, what it does, and see if I am interested in creating an account to use the application.	I can access my account	High	Sprint-1
		USN-2	As a visitor I would like a link to a demo page of what the application looks like and does.	I can visit a demo page	High	Sprint-1
		USN-3	As a visitor who has made an account I would like to sign in to access my account.	I can register with Outlook Credentials	Low	Sprint-1
	Login	USN-4	As a interested user, I want a simple sign up page	I can register with Gmail Credentials	Low	Sprint-1

	Meals	USN-5	As a user, I want be able to add meals and have a over all view of what I am eating.	I can add the meal and view the task	High	Sprint-1
		USN-6	As a user I want to see the macro and micro nutrient totals each day	I can able to view the nutrients	High	Sprint-2
		USN-7	As a user I want a link to a weekly summary	I can view the summary	High	Sprint-2
		USN-8	As a user, I want to be able to add ingrediants in name and quantity	I can read the ingredients in name & quantity	High	Sprint-2
		USN-9	As a user, I want to save my recipes	I can store the recipes	Medium	Sprint-2
		USN-10	As a user, I want to be able to upload a picture of the recipe	I can upload the recipe's picture	High	Sprint-3



		USN-11	As a user, I want to be able to view the nutrition profile of the meal in my saved recipes	I can view my profile Account / save recipes to my profile	Low	Sprint-3
		USN-12	As a user, when i click on the nutrition profile i want it easily readable with most relevant information at the top.	I want to study the profile with readable information	Medium	Sprint-4
		USN-13	As a user, when i view my weekly totals I want averages and other pertinent information	I can manage the average of information in weekly basis	High	Sprint-1

**TABLE 5.1 USER STORIES**

## 6. PROJECT PLANNING & SCHEDULING

### 6.1 SPRINT PLANNING & ESTIMATION

Sprint	Functional Requirements(Epic)	User Story Number	User Story/Task	Story Points	Priority	Team Members
Sprint 1	User Panel	USN-1	The user will login into the website and go through the products available on the website.	20	High	Sneha M G Mridula K Mohanapriya R Hariraja M
Sprint 2	Admin Panel	USN-2	The role of the admin is to check out the database about the stock and have a truck of all the things that the users are purchasing.	20	High	Sneha M G Mridula K Mohanapriya R Hariraja M
Sprint 3	ChatBot	USN-3	The user can directly talk to Chatbot regarding the products. Get the recommendations based on information provided by the user	20	High	Sneha M G Mridula K Mohanapriya R Hariraja R

Sprint 4	Final Delivery	USN-4	Container of applications using docker  Kubernetes and development the application.  Create the documentation and final submit the application	20	High	Sneha M G Mridula K Mohanapriya R Hariraja M
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**TABLE 6.1 SPRINT PLANNING & ESTIMATION**

## 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	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

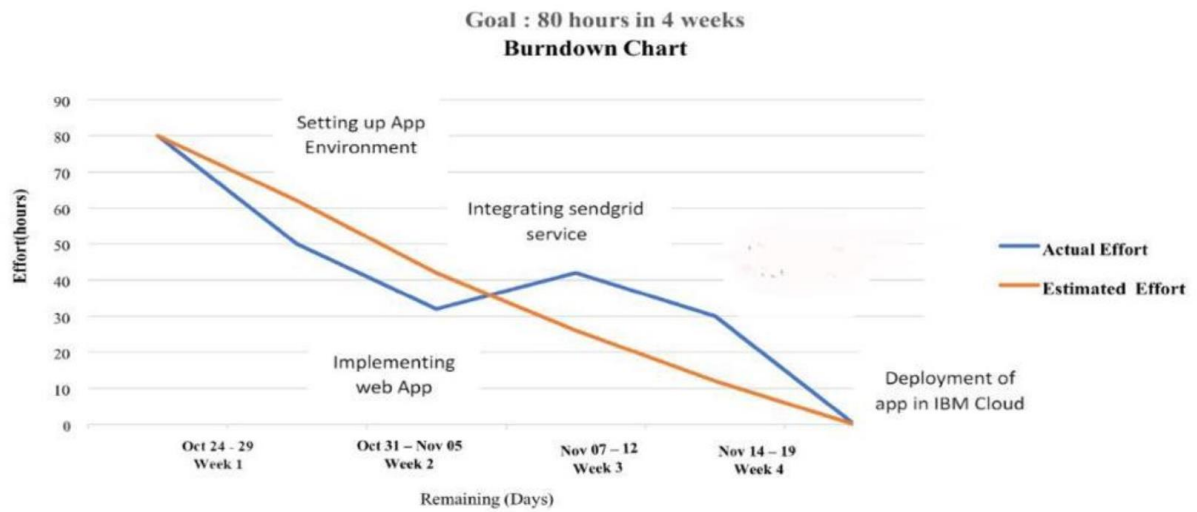
**TABLE 6.1 SPRINT PLANNING & ESTIMATION**

## VELOCITY:

Imagine we have a 10-day sprint duration, and the velocity of the team 20(points per sprint).Let's calculate the team's average velocity (AV) per iteration unit.

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

### 6.3 REPORT FROM JIRA



**FIG 6.3 REPORT FROM JIRA**

## CHAPTER 7

### CODING & SOLUTIONING

#### 7.1.1 FEATURE 1 : LOGIN

##### 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.

##### Login checker :

```
div
class="container">

    <div class="row">
        <div class="col-lg-12">
            <h1>Log In</h1>
            <p>You don't have a password? Then please <a
class="white" href="sign-up.html">Sign Up</a></p>
            <!-- Sign Up Form -->
            <div class="form-container">
                <form id="logInForm" data-
toggle="validator" data-focus="false">
                    <div class="form-group">
                        <input type="email" class="form-
control-input" id="lemail" required>
                        <label class="label-control"
for="lemail">Email</label>
                        <div class="help-block with-
errors"></div>
                    </div>
```

```

        <div class="form-group">
            <input type="text" class="form-
control-input" id="lpassword" required>
            <label class="label-control"
for="lpassword">Password</label>
            <div class="help-block with-
errors"></div>
        </div>
        <div class="form-group">
            <button type="submit" class="form-
control-submit-button">LOG IN</button>
        </div>
        <div class="form-message">
            <div id="lmsgSubmit" class="h3
text-center hidden"></div>
        </div>
    </form>
</div> <!-- end of form container -->

```

### 7.1.2 FEATURE 2 : SIGNUP

#### 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.

#### Query to check if email is registered or not :

```

<div
class="form-
container">
    <form id="logInForm" data-toggle="validator"
data-focus="false">
        <div class="form-group">
            <input type="email" class="form-control-
input" id="lemail" required>
            <label class="label-control"
for="lemail">Email</label>

```

```

                                <div class="help-block with-
errors"></div>
                                </div>
                                <div class="form-group">
                                    <input type="text" class="form-control-
input" id="lpassword" required>
                                    <label class="label-control"
for="lpassword">Password</label>
                                    <div class="help-block with-
errors"></div>
                                </div>
                                <div class="form-group">
                                    <button type="submit" class="form-
control-submit-button">LOG IN</button>
                                </div>
                                <div class="form-message">
                                    <div id="lmsgSubmit" class="h3 text-
center hidden"></div>
                                </div>
                                </form>
                                </div> <!-- end of form container -->

```

### 7.1.3 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.

## CHAPTER 8

### TESTING

#### 8.1 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



## **CHAPTER 9**

### **RESULTS**

#### **9.1 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%

## **CHAPTER 10**

### **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 . Efficiency of the product needs to be improved.
2. Consistency of the product is not 100%.
3. Not a compact sized product. Size needs to be decreased.

## **11. 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.

## **12.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-14991-1659593051>**

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