

PROJECT REPORT

TEAM NAME: PRATIBHA

TEAM MEMBERS:

- **RAJESHWARI V**
- **PRIYADHARSHINI M**

INTRODUCTION:

OVERVIEW:

It would not be possible for people to know the calorie of every food they intake .The main idea of the project is to develop a web application that helps people **identify the food and the calorie** they intake along with it.In addition to it this application the application also calculates the **BMI** and **BIOLOGICAL AGE** of the person.

PURPOSE:

This application developed with the help of **pre trained model incorporated** within it takes input from the user in form of image identifies the type of food and along with the quantity specified by the user tells the calories of the detected food through which **people could track the calorie intakes** and help people to maintain a **balanced diet**.

Along with this feature the application also finds the **BMI(Body Mass Index)** of the user with their height and weight with the help of **BMI model** and it also finds **BIOLOGICAL AGE** of the person with the help of model we have trained.

In brief this application would help people adopt to healthier life style by notifying them about their calorie intake, their BMI value and BIOLOGICAL AGE.

LITERATURE SURVEY:

EXISTING SOLUTION:

Food Detection and Recognition Using Convolutional Neural Network

Authors:Hokuto Kagaya,Makoto Ogawa

They developed a successful CNN model to detect and recognize food.Their CNN showed significantly higher accuracy than did traditional support-vector-machine-based methods with handcrafted features.They also found that found that the convolution kernels show that color dominates the feature extraction process. For food image detection, CNN also showed significantly higher accuracy than a conventional method did.

FoodTracker: A Real-time Food Detection Mobile Application by Deep Convolutional Neural Networks

AUTHORS: Jianing Sun, Katarzyna Radecka, Zeljko Zilic

They developed a MOBILE APPLICATION to recognize food items of multi-object meal from a single image in real-time, and then return the nutrition facts with components and approximate amounts.well-suited for mobile devices with negligible inference time and small memory requirements with a deep learning algorithm.

PROPOSED SOLUTION:

Pratibha: A Real-time Food detection, Calorie predictor, BMI calculating and Biological age calculating Web Application using Convolution Neural Networks and Linear Regression

Team Members: Rajeshwari V, Priyadharshini M

We developed a web Application which users dont need to download separately to detect or to find calories of food they intake. The application takes picture of the food they intake and quantity of food they in took and with the image it predicts the type of food and with the predicted food it finds the calorie of the food and with the help of the quantity specifies it notifies the total calorie in took by the user.

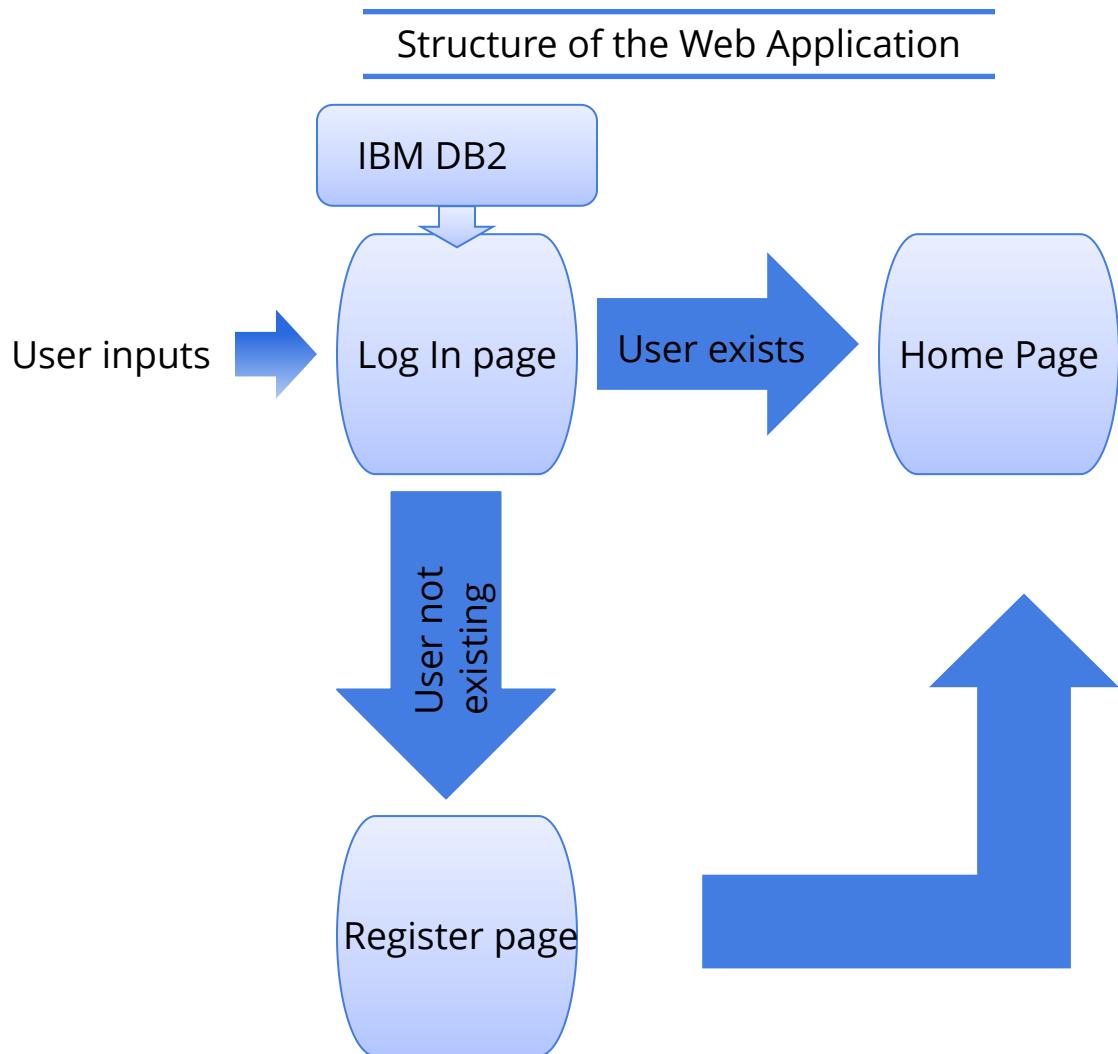
It also finds the BMI of the person when given Height and weight and Calculates Biological age

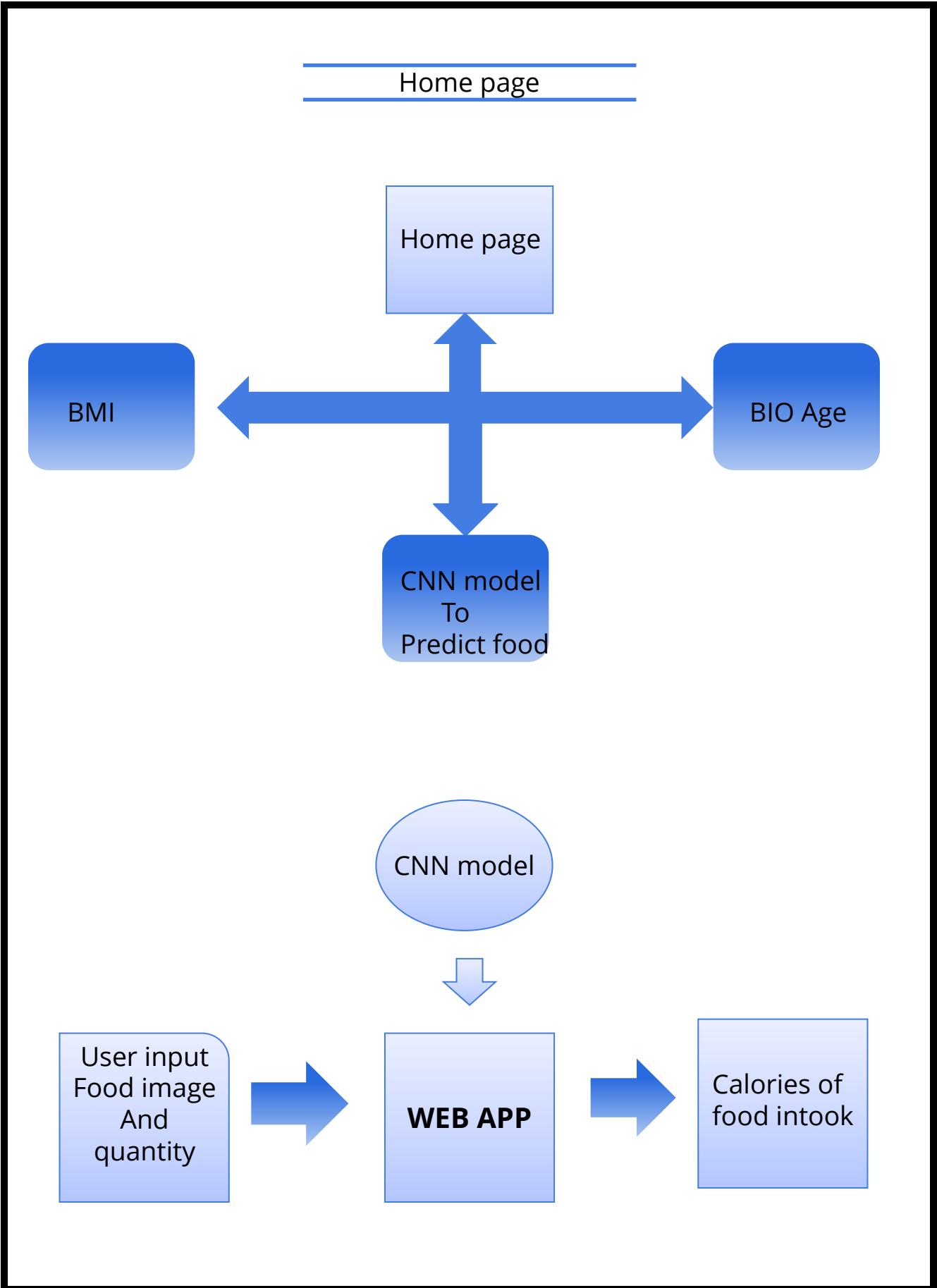
of the person with the help of the model generated.

To calculate Biological age we used the fact that **Biological age and Bmi are closely related**. if the bmi of person is <18.5 then one year is added to his current age and if it is between 25 to 29.9 then two years are added to his current age else if it is above 30 then three years are added to his current age finally if it is between 18.5 to 25 then one year is minimized from his current age.

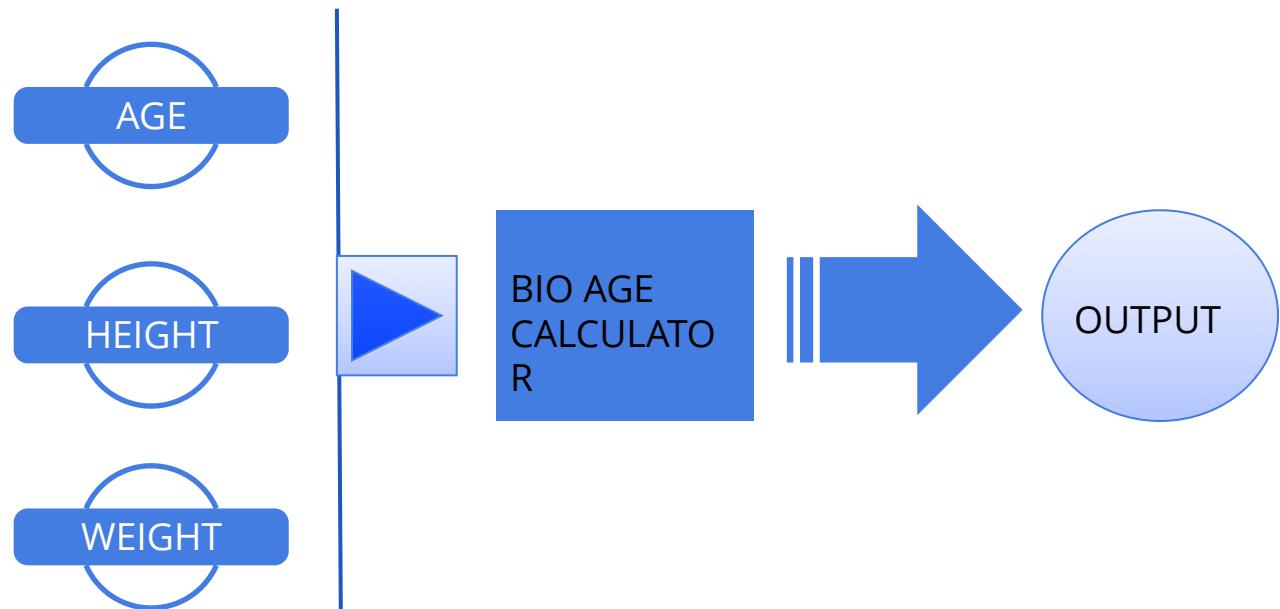
THEORITICAL ANALYSIS:

Block Diagram





BIOLOGICAL AGE CALCULATOR



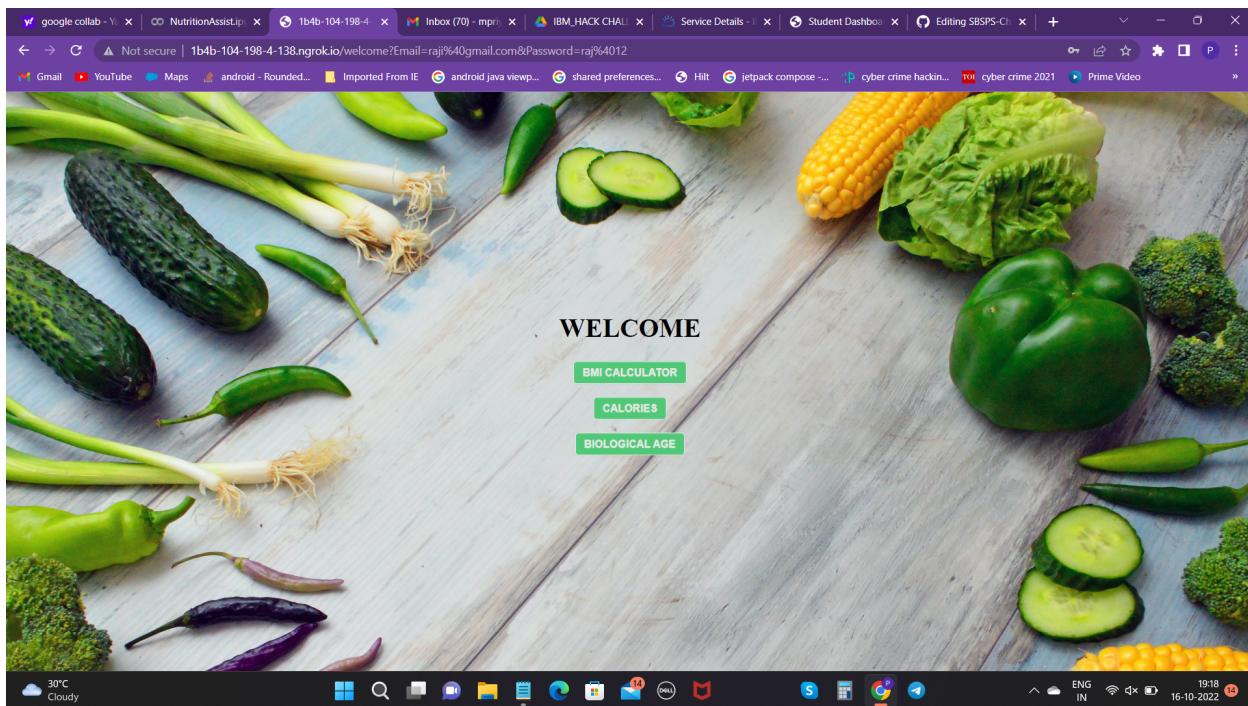
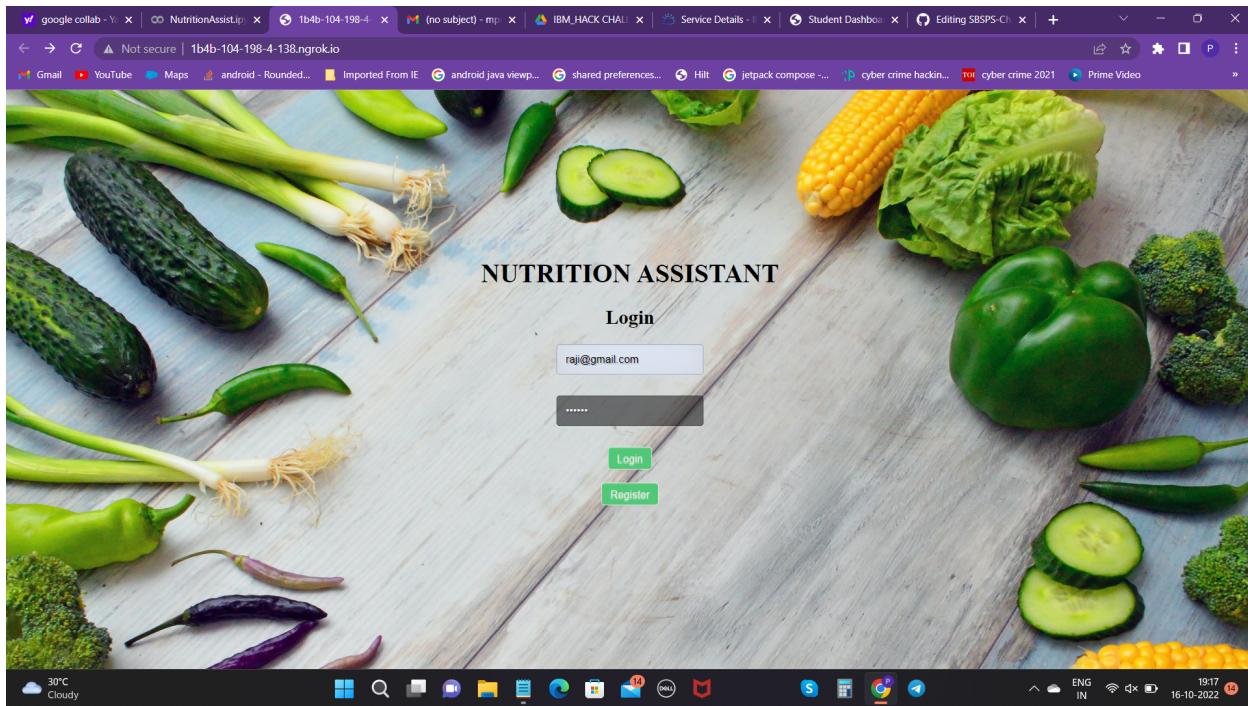
HARDWARE AND SOFTWARE REQUIREMENTS:

- IBM _DB2 -
 1. To store the user credentials when they log in for the first time which is later used in their future log ins.
 2. It is also used to store food names along with their calorie values per servings which is later used in calculation calorie of the food after detecting the food.
- Google Colab - used to train the model and also used to develop the web application.
- Flask - used to launch the web application created using python in the web.
- IBM Watson Studio - to develop a linear regression model to calculate bmi value and biological age of the person.
- HTML and CSS - to develop web application

EXPERIMENTAL INVESTIGATIONS:

- During the training and testing of the model it was found that CNN model was easy to predict images if it was trained with images having white background.
- It requires at-least 100 images per class to create a model that predicts perfectly.
- Number of epochs and batch size should be reduced as training continues to increase accuracy of the model.
- Mainly the training data set should have equal number of images in each class.

WEB APP WORKING IMAGES:



google collab - Y | NutritionAssist.ip | BMI calculator | Inbox (70) - mpr... | IBM HACK CHAL... | Service Details - | Student Dashboard | Editing SBSPS-C... | +

Not secure | 1b4b-104-198-4-138.ngrok.io/bmi?Weight=40&Height=135

Gmail YouTube Maps android - Rounded... Imported From IE android java view... shared preferences... Hilt jetpack compose ... cyber crime hacking... cyber crime 2021 Prime Video

Enter your Weight:

40

Enter your Height:

135

Calculate

26.363818411101235

BODY MASS INDEX **BMI**

BMI Range	Category
< 18.5	UNDER WEIGHT
18.5 - 24.9	NORMAL
25.0 - 29.9	OVER WEIGHT
30.0 - 34.9	OBESER
> 35.0	EXTREMELY OBESER

Cloudy 30°C ENG IN 19:19 16-10-2022

google collab - Y | NutritionAssist.ip | BMI calculator | Inbox (70) - mpr... | IBM HACK CHAL... | Service Details - | Student Dashboard | Editing SBSPS-C... | +

Not secure | 1b4b-104-198-4-138.ngrok.io/calorie

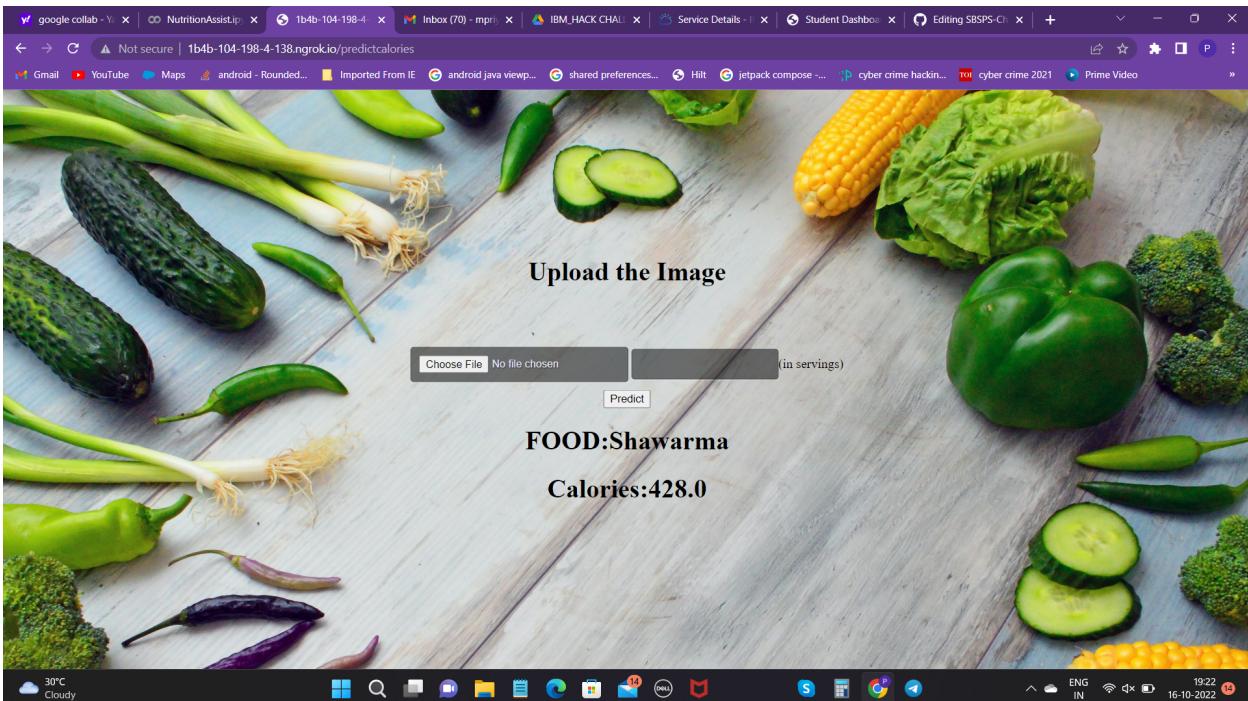
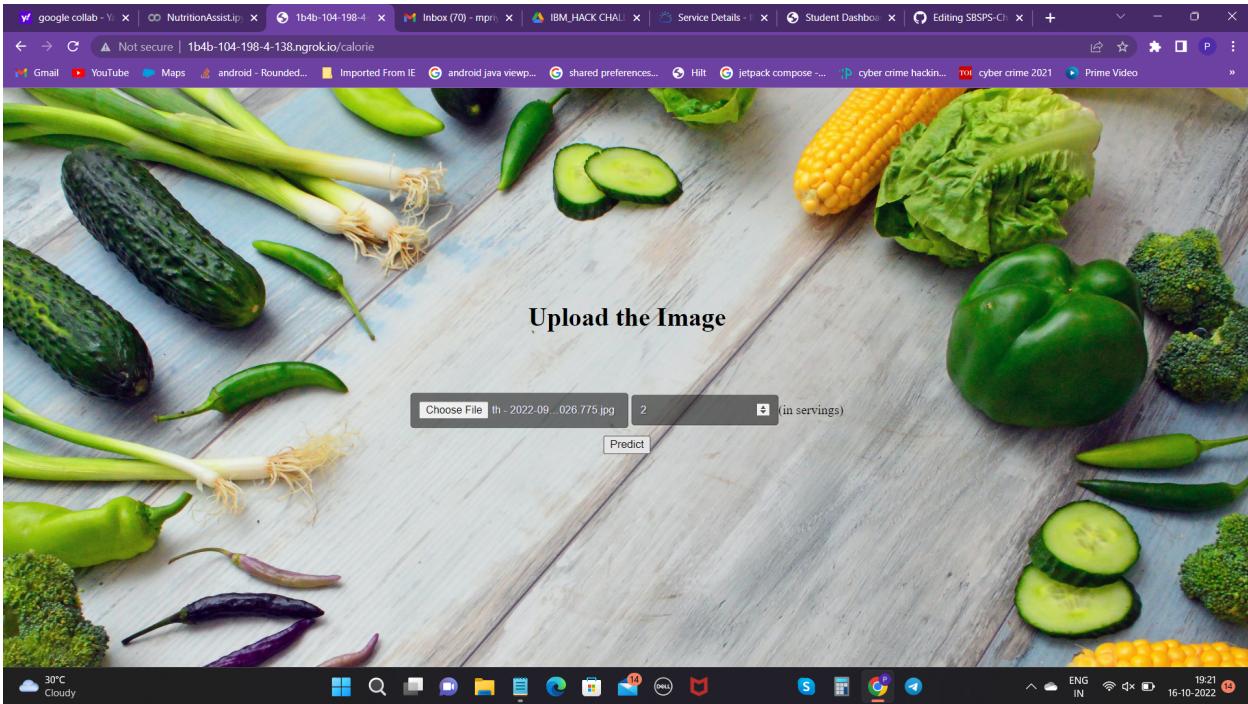
Gmail YouTube Maps android - Rounded... Imported From IE android java view... shared preferences... Hilt jetpack compose ... cyber crime hacking... cyber crime 2021 Prime Video

Upload the Image

Choose File | No file chosen (in servings)

Predict

Cloudy 30°C ENG IN 19:20 16-10-2022



RESULTS:

The model was created with better validation accuracy and minimal loss and it was able to predict correct calorie values of food items if given image was clear.

The application was able to get image from the user and send it to the model for prediction and the model returned the predicted value was set back successfully to the database to fetch the calorie value of the food predicted which was later multiplied with servings and finally the calorie value was displayed to the user.

ADVANTAGES AND DISADVANTAGES:

- The model was able to predict the food correctly and the calorie values are returned to user perfectly.
- BMI and Biological age were calculated without any error
- the web app has no bugs.

DISADVANTAGES:

1. The model can predict only 92 food classes.

APPLICATIONS:

1. Would help people to keep track of calories values
2. Would help people to find BMI and BIOLOGICAL AGE
3. No need to download an application to do this work.

CONCLUSION:

The app work perfectly and successfully launched in the internet

FUTURE SCOPE:

1. Can add more classes to the data set to predict few more food items.
2. Accuracy can be increased by adding more food items and training.
3. Can create and use object detection and few other technologies to automatically detect the calories directly from the image.