



(ISE-I)

Automated Food Recognition and Personalized Health Recommendations

This project integrates AI with health management to provide personalized diet and workout recommendations. The system recognizes food items using a CNN model and leverages Google Gemini for calorie estimation and fitness suggestions.



Team Members



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Roll no: 56



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Roll no: 60



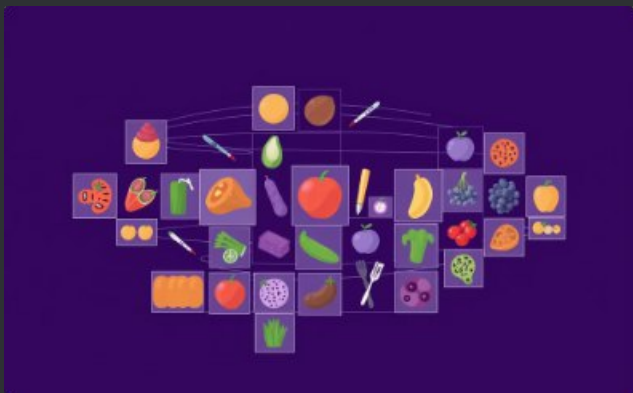
Gourav Kumbhar
Roll no: 52



Problem Statement

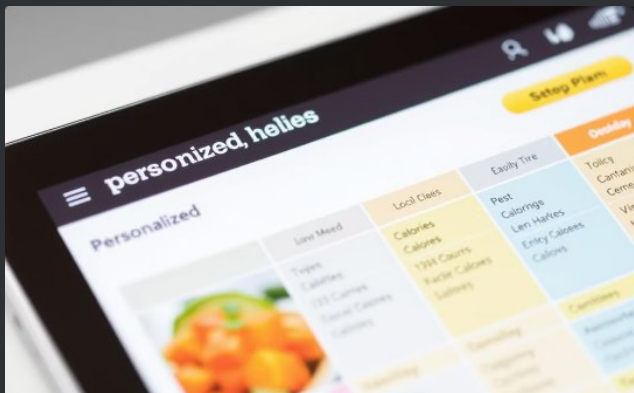
Many people struggle to maintain a balanced diet and track their caloric intake, leading to health issues. A reliable food recognition and calorie estimation system could help users better understand their eating habits and make healthier choices.

Work Done Till Date



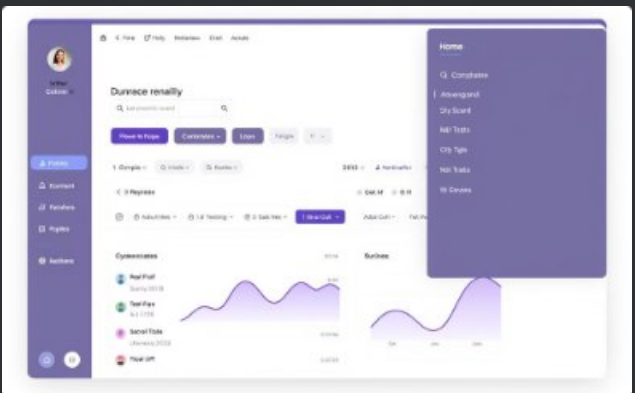
Food Recognition

Implemented a CNN model with 93% accuracy to recognize a variety of food items from images.



Calorie Estimation

Integrated Google Gemini to provide calorie estimates and personalized nutrition recommendations based on the recognized foods.



Web Interface

Created a simple, intuitive web application using Streamlit to enable users to interact with the food recommendation features.



PDF Report

Developed a feature to generate a downloadable PDF report summarizing the user's health insights personalized recommendations

Work Remaining



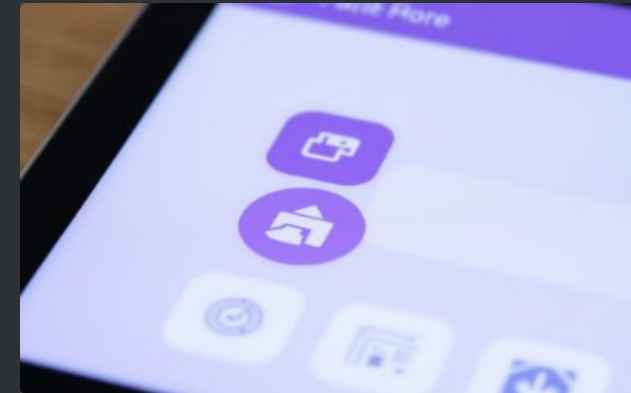
Fine-tuning Model Accuracy

Enhancing the computer vision algorithms to accurately recognize a wider variety of food items, including complex dishes and regional cuisines.



Testing and Validation

Expanding the user base to gather feedback and ensure the system meets the diverse needs of individuals across different health conditions.



Improving UI/UX

Refining the user interface and experience to make the app more accessible, engaging, and seamless for all users.

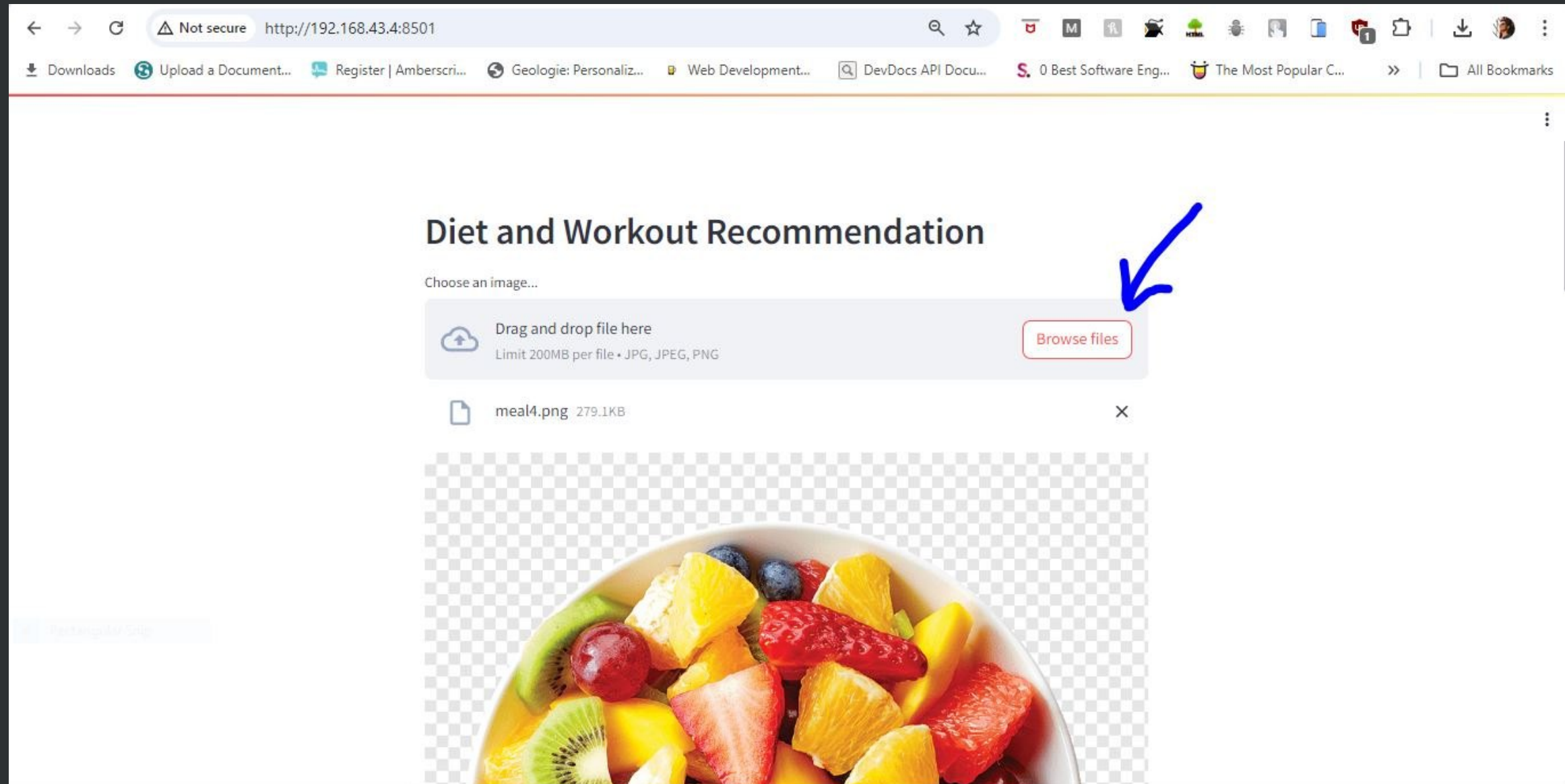


Final Integration and Deployment

Seamlessly integrating the various system components and preparing the solution for a successful and impactful launch.

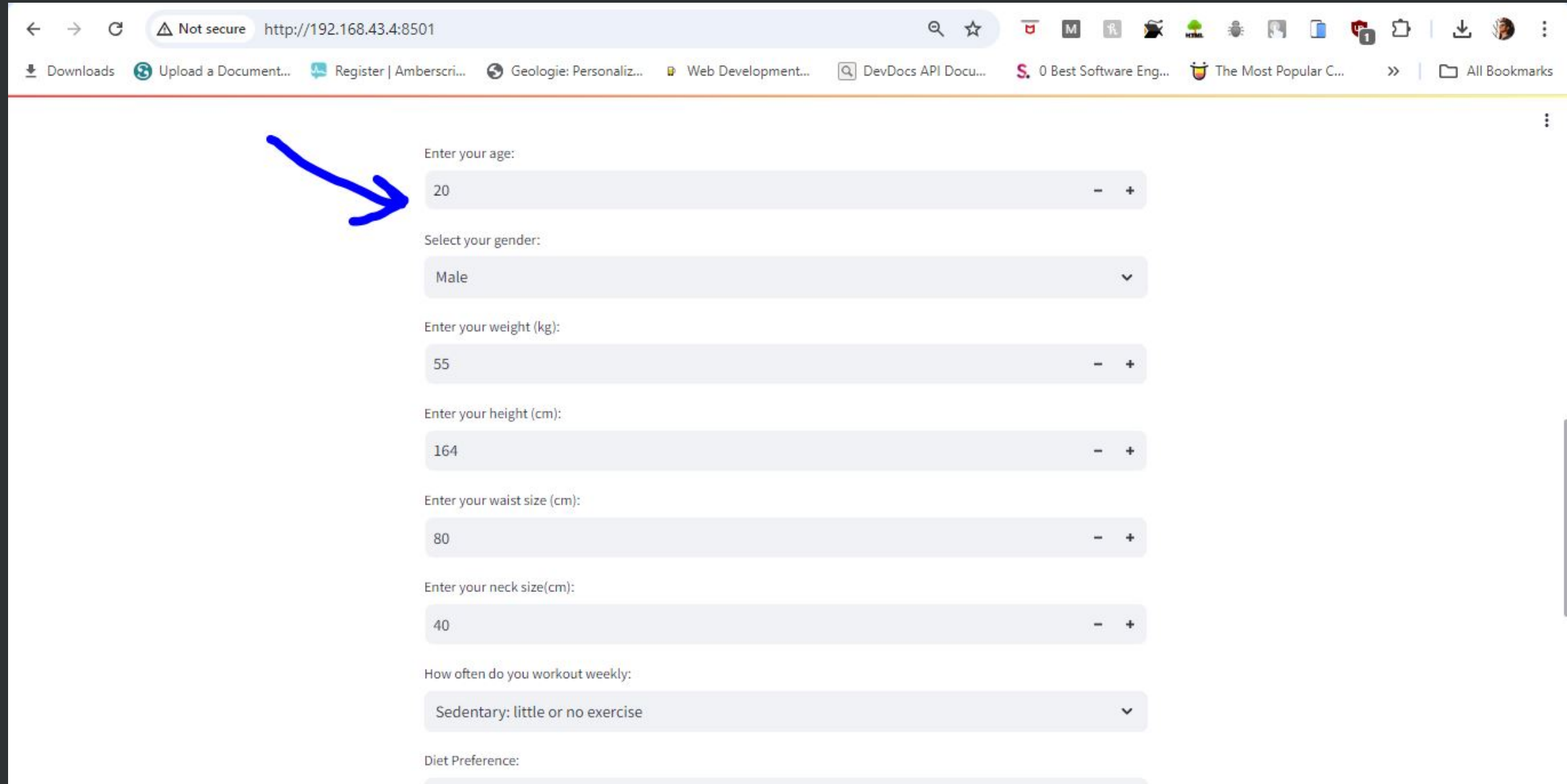
Screenshots

Upload Image



Screenshots

Collect User Personal Data



The screenshot shows a web browser window with the address bar displaying "http://192.168.43.4:8501". The browser's bookmark bar is visible, showing various links. The main content area displays a form for collecting personal data. A blue arrow points to the "Enter your age:" input field, which contains the value "20". Below this are several other input fields and dropdown menus for gender, weight, height, waist size, neck size, workout frequency, and diet preference.

Enter your age:

20

Select your gender:

Male

Enter your weight (kg):

55

Enter your height (cm):

164

Enter your waist size (cm):

80

Enter your neck size(cm):

40

How often do you workout weekly:

Sedentary: little or no exercise

Diet Preference:

Screenshots

Get Recommendations

The screenshot shows a web browser window with the address bar displaying "http://192.168.43.4:8501". The browser's bookmark bar contains several links, including "Downloads", "Upload a Document...", "Register | Amberscri...", "Geologie: Personaliz...", "Web Development...", "DevDocs API Docu...", "0 Best Software Eng...", and "The Most Popular C...".

The form on the page contains the following fields:

- A text input field (partially visible).
- "How often do you workout weekly:" with a dropdown menu showing "Sedentary: little or no exercise".
- "Diet Preference:" with a dropdown menu showing "Veg".
- "Select medical conditions (if none select 'none'):" with a dropdown menu showing "None".
- "Enter your region:" with a text input field showing "India".
- "Enter any allergies (if none, type 'None'):" with a text input field showing "None".
- "Meal Type:" with a dropdown menu showing "Breakfast".
- A "Get Recommendations!" button.

A blue arrow points to the "Get Recommendations!" button.

Screenshots

Food Recognition and Calorie Estimation

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⚠ Not secure http://192.168.43.4:8501

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📁 Downloads 🌐 Upload a Document... 🗨 Register | Amberscri... 🌐 Geologie: Personaliz... 📁 Web Development... 🔍 DevDocs API Docu... 📄 0 Best Software Eng... 🏆 The Most Popular C... >> 📁 All Bookmarks

Personalized Diet and Workout Recommendation

Food Recognition

Predicted Food: Fruit Salad

Calorie Estimation & Food Analysis

Item	Total Calories	Protein (g)	Carbs (g)	Fats (g)	Fiber (g)	Vitamins
1 cup Strawberries	46	1	11	0.4	2	Vitamin C, folate, potassium
1/2 cup Kiwi	42	1	11	0.5	3	Vitamin C, potassium, folate
1/2 cup Mango	60	1	15	0.3	2	Vitamin A, C, potassium
1/2 cup Grapes	52	0.4	14	0.2	1	Potassium, Vitamin K
1/2 cup Orange	62	1	16	0.2	2	Vitamin C, potassium

Diet Recommendation



Given that your daily calorie needs are around 1800-2000 calories (calculated further down), here is a sample 4-meal plan with approximately 1800 calories:

Meal 1 (Breakfast):

- 1 cup Fruit Salad (262 calories)
- 1 cup Oatmeal with 1/4 cup berries (200 calories)
- 1 cup skim milk (85 calories)

Meal 2 (Lunch):

- 1 cup Lentil soup with 1 slice whole wheat bread (300 calories)
- 1 medium sized salad with a vinaigrette dressing (150 calories)

Meal 3 (Dinner):

- 1 cup Vegetable Biryani (350 calories)
- 1 cup Green Salad with a lemon dressing (100 calories)

Meal 4 (Snack):

- 1 cup Yogurt with 1/2 cup fruit (150 calories)

Food to avoid:

Screenshots

Workout Recommendation

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Fitness Report

1. BMI:

◦ BMI = (Weight (kg) / Height (m)²)

◦ BMI = (55 / (1.64)²) = 20.6 (Healthy weight range)

2. BFP:

◦ BFP = 86.010 × log10(abdomen-neck) - 70.041 × log10(height) + 36.76

◦ BFP = 86.010 × log10(80-40) - 70.041 × log10(164) + 36.76 = 20.5% (Healthy body fat percentage)

3. Daily Calorie Intake:

◦ Your BMR (Basal Metabolic Rate) is approximately 1600 calories.

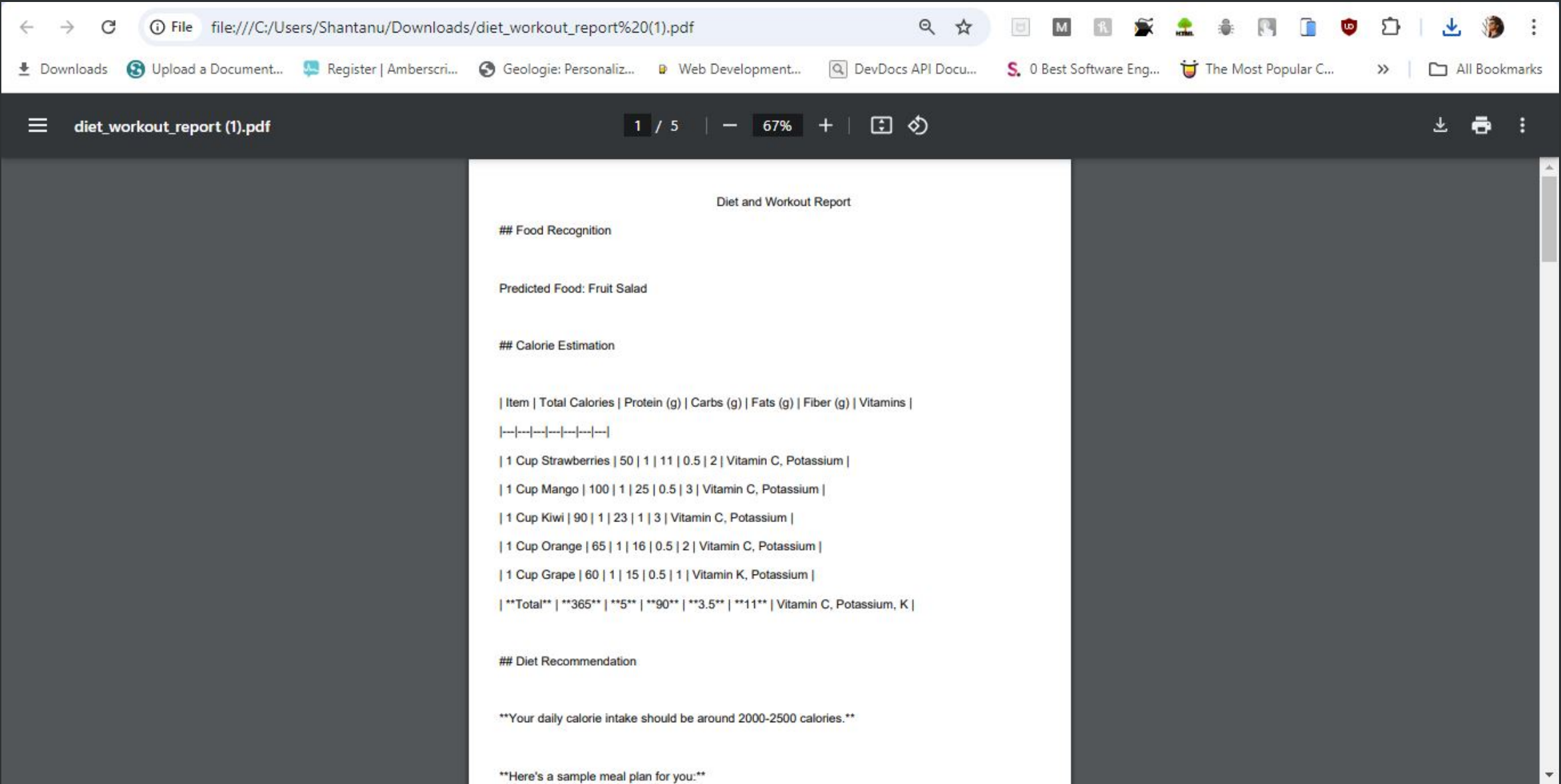
◦ As you are sedentary, your daily calorie intake should be around 2000-2500 calories.

Workout Recommendation for week

Day	Exercise	Duration
Monday	Cardio (Running, cycling, swimming)	30 minutes
Tuesday	Strength Training (Squats, push-ups, lunges)	30 minutes
Wednesday	Rest	
Thursday	Cardio (Running, cycling, swimming)	30 minutes
Friday	Strength Training (Plank, crunches, burpees)	30 minutes
Saturday	Yoga or Stretching	30 minutes

Screenshots

Download Fitness Report



Sponsorship

A gym provided sponsorship to develop an Automated Food Recognition and Personalized Health Recommendations System, enabling them to offer customers personalized fitness insights and recommendations to help maintain a healthy lifestyle.



AW FITNESS GYM

Aditya Wadkar

Beside new high court building, Kasaba Bawada Main Road,
Kolhapur, Maharashtra. 416006

DATE:

To,
Dr. Siddeshwar. V. Patil
HOD CSE-AIML ,
DYPCET,
Kasaba Bawda, Kolhapur.

Subject: Acceptance of sponsorship for last year project of AIML students of DYPCET.

Dear sir,

I Mr. Aditya Wadkar, Owner of "AW Fitness Gym" would like to inform you that, we are providing the sponsorship for last year project of AIML students of DYPCET for project entitled "Automated Food Recognition for Personalized Diet and Workout Recommendation." for our GYM.

Project Group as,

1. Shantanu Chougule
2. Swapnil Alange
3. Abhijeet Jainapure
4. Aditya Patil
5. Gourav Kumbhar

We kindly request that the project source code be submitted in both hard and soft copy. The sponsorship amount will be determined based on the quality and performance of the project, as discussed.

We look forward to a successful collaboration and believe this project will contribute to the advancement of AI and ML applications in health and fitness.

Sincerely,
Aditya Wadkar

+918407947801

AW FITNESS GYM

Kasaba Bawada, Kolhapur

THANK YOU

Let's make world a "healthier" place!