

2024 Nittany AI Challenge

Submission ID: 18

TEAM INFORMATION

1. Project Team Name:

MealPrepPro-Team 615

2. Team Members:

List each team member including Name, PSU Email, Campus, and College
(ex: Jane Doe, jxd123@psu.edu, Shenango, Engineering)

Benjamin Rathman, blr5545@psu.edu, State College, Engineering
Cole Weisser crw5753@psu.edu, State College, Communications
Aidan Hinnenkamp, arh6106@psu.edu, State College, Engineering

3. Primary Contact/Team Lead:

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PROJECT INFORMATION

4. Problem / Opportunity Statement

Documentation should include an overview of the problem and the method used to address that problem. This should demonstrate that you clearly understand the problem or opportunity you are addressing with AI. Response is limited to 300 words.

The problem that our group identified is obesity. Obesity is becoming a rampant problem all across the world, with 2 billion people in the entire world suffering. All of our group members have family members that suffer or have passed due to obesity. Obesity is of course treatable with a healthy lifestyle and diet. To address this problem we have created an app that using a researched formula calculates the dietary needs of the user. Then finds recipes using web scrapping and machine learning to find personalized results. From the selected recipes the ingredients are compiled into a grocery list for the users convenience.

5. MVP Use Case

Provide a sample use case for the tool. Describe how someone will use the MVP functionality you intend to build and the benefits or impact the MVP will provide. Response is limited to 300 words.

Someone who uses this app will be struggling with weight loss and decide to start treating it with our app. Once downloading the app they will be asked to input characteristics about themselves, these include height, weight, activity level, and allergies. The user will then be shown their macro and micronutrient needs on a day-to-day basis. For each day of the week, they choose from several recipe options that have been selected to fit their calculated dietary needs. Once a recipe has been selected for each day of the week, a grocery list will be generated and presented to the user. After a week of use, future recommended recipes will be tailored to the user's preferences (this will be done through a Neural Network.) Someone using this app will find it to be extremely personalized having recommended recipes that taste delicious while allowing them to explore new

recipes and foods. They will also find that using the app saves them time when choosing and prepping meals while also being a cost-effective solution to weight loss.

6. Data Availability

Detail the data sources leveraged within the prototype as well as the data sources necessary if this project moved to MVP. If available, please detail the location and availability of the data sources and/or the plan for collecting the necessary data. Remember that while we can provide some assistance with finding data sources, finding and gaining access to those sources is the team's responsibility. Response is limited to 300 words.

To find our micro and macronutrient calculation formula we used the formula provided by Harvard.edu which they found from extensive research. Web scraping will find recipes that fit the user's needs based on the previous calculations. While web scraping for commercial uses in some cases is illegal laws like the Computer Fraud and Abuse Act (CFAA) in the United States prohibited web scraping if one needs to input a passwords to gain access. There are several databases containing many recipes for public use that are free, they include but are not limited to, Pinch of Yum and Food.com. A future goal would be to partner with a recipe catalogue to have niche recipes that only our users have access to. Once the file is obtained scrapping the ingredients to a recipe is permitted.

7. Technology

Provide a technical description of the approach the team used to achieve its proposed goal, including the ways in which the selected AI platforms are used within the prototype and how the team anticipates using those and other services in the MVP phase. Specifically, the documentation should include a list of the components of the selected AI platforms that are leveraged in the prototype, any additional components that may be leveraged in the development of the MVP, and additional services that may be necessary for continued development. Response is limited to 350 words.

To figure out what type of software we needed to make this app a reality, we first created a procedural flow chart. this allowed us to map out what functionalities we wanted the app to encompass and how we were going to achieve this. The first part of the user interface asks for height, weight, gender, activity level, and allergies. The information gathered from the height, weight, gender, and activity level will then be used in a formula found on Harvard.edu to calculate how many calories, grams of protein, fats, and carbs are needed per day to lose weight based on the user's current conditions. The formula used to find this information was originally coded in Python but we plan to switch all of our code to Swift to be able to upload it to the app store. For the user interface, we used Figma to generate a visual for what we want our UI to look like. To select the recipes from the information calculated we decided to use a web scraping algorithm in Python which of course will be converted to Swift to be developed into an app on the App Store. To then get the ingredients from the selected recipe, a Python file scraping algorithm will be employed. For both of these scraping algorithms, there are extensive Python libraries we can use or use as an example to create our own. Finally to personalize the App a Neural Network will be implemented to help recommend recipes to the user that are based on their previous selections. A feature we would like to implement is the app will ask for a weekly weight update to recalculate macro and micronutrients and improve the app's personalization features.

8. Prototype Video Overview

All teams submitting a prototype for review are required to submit video demonstrations of their working prototypes. The videos must:

- *be no more than 5 minutes in length.*

- *explain the intent, goals, and potential impact of the solution.*
- *demonstrate the basic, working functionality of the prototype.*
- *be available through a YouTube link accessible for viewing by the Challenge reviewers.*

The production value of the videos will not be factored into the review, but they must clearly and accurately represent the prototype functionality. To help, Media Commons at Penn State provides free One Button Studio options throughout the Commonwealth.

****See Video Provided in the Folder**