MedMatch

Project Summary

MedMatch is an all-in-one tool for users to help diagnose their symptoms, find the disease that best matches what they are experiencing, and recommend either an over-the-counter treatment or a doctor's visit. Using a dataset of 400 different diseases and another of thousands of FDA approved medications, users can find medication that is tailored to their needs. If the suggested medication is available over-the-counter, the application will find the closest pharmacies and present them on a map to the user. If the medication requires a prescription, MedMatch will suggest visiting their personal healthcare provider for a more comprehensive diagnosis.

Additionally, MedMatch will allow users to share their own experience with different medications. People have different reactions to the same medications, so it is important for these experiences to be shared to someone who may be wary of what medication to take. If a user permits it, they can share biomedical information in the review of the medication. This will allow people with similar body types or medical history to compare with people alike to them. By building a transparent community of people with shared medical experiences, MedMatch will contribute towards the end of medical anxiety and a healthier world.

Problem Statement (Description)

Many individuals experience symptoms but are not sure if they should get medical attention, home treatment, or over-the-counter medication. Searching for medical advice online often gives misleading and unreliable results. Our solution will provide reliable matching of symptoms to conditions using verified medical datasets and over-the-counter medication recommendations for common symptoms. Medmatch users will be allowed to review the medications used on the app. If a medication is not available over-the-counter, the individual will be recommended to go to a doctor.

Technically Challenging and Creative Features

- One creative feature we could include is the use of an LLM to improve symptom-to-condition matching. If users input their symptoms as text, it can be difficult to standardize and match them to the predefined conditions in our dataset. An LLM could help interpret and normalize user inputs to the closest matching symptoms, ensuring more accurate condition retrieval
- We could use Chart.js to create easily readable charts based off of our users reviews to grab and display the general consensus from the reviews for a medication
- The Google Maps API could be used to help users find the nearest pharmacies or healthcare providers

Usefulness

Our application is useful because it provides a quick and easy way to find medicine that could be used to treat your symptoms. Searching online for your symptoms and medicine can often be confusing and overwhelming, with conflicting sources and information. We aim to simplify this process. The basic functionality is a user inputting symptoms and getting medicine recommendations in return, with information and reviews available. We'll match symptoms to conditions and then suggest medicine based on them. We'll also have a database of user reviews that users can choose to upload if they've used that medicine. One simple feature is inputting symptoms and getting results based on them, while a more complex one is being able to choose to create and upload reviews of a medicine based on their experience with it. Personal information in reviews will be kept confidential, so when reviews are matched based on condition or body type, there is no way to identify who made the post.

Many symptom checkers already exist, such as WebMD and Mayo Clinic's symptom checker, but they often provide broad, generalized results without directly linking symptoms to accessible treatments. Our web app will map possible conditions to medicine and will avoid recommending medicine that needs a prescription to avoid confusion. We will also include reviews from other users with similar conditions and body types who've also used the medicine. This adds another level of verification and double-checking that other apps don't include.

Realness: Data Sources & Formats

We will be using publicly available datasets of Drug Labeling from https://open.fda.gov/data/downloads. These are some of the datasets we intend on using:

Drug Information

- Source
  - Food and Drug Administration
  - https://open.fda.gov/data/downloads/
- Sample Link
  - https://download.open.fda.gov/drug/label/drug-label-0001-of-0013.json.zip
- Format – JSON
- Cardinality – 240,000
- Degree – 46

Diseases and Symptoms

- Source
  - https://huggingface.co/datasets/QuyenAnhDE/Diseases_Symptoms/viewer/default/train?p=3
- Format – CSV
- Cardinality – 400
- Degree – 3

Detailed Functionality

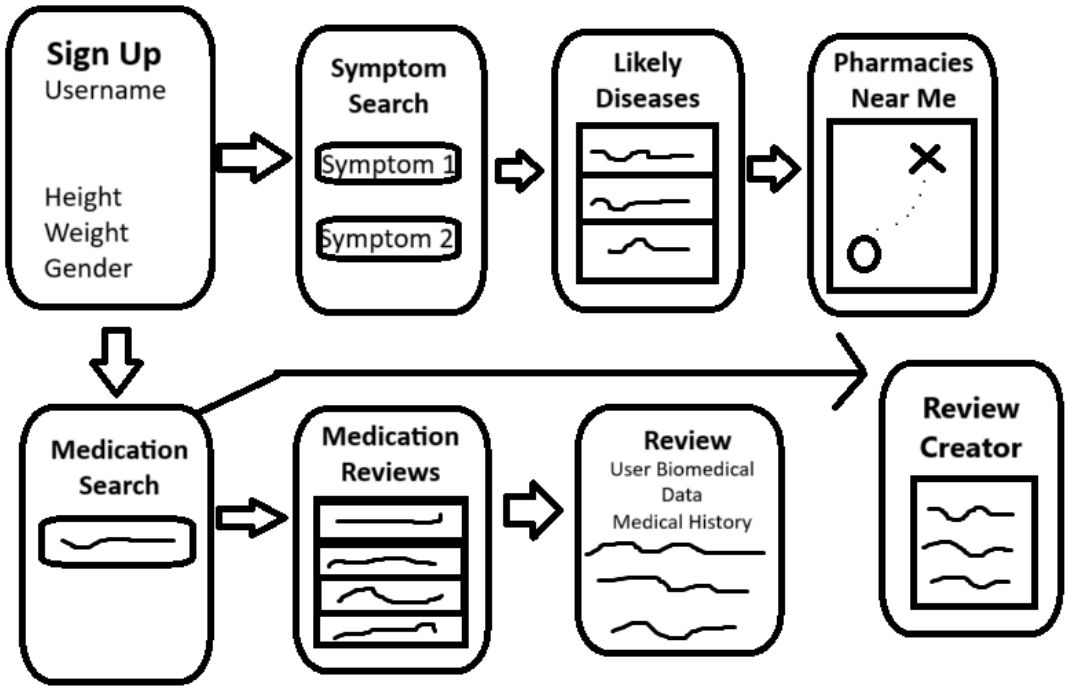
User Interactions

- **Enter Symptoms** – Users search or select multiple symptoms.
- **View Possible Conditions** – The app lists conditions linked to those symptoms, ranked by likelihood.
- **Severity Classification** – Conditions are labeled mild, moderate, or severe.
- **Get OTC Medication Suggestions** – Recommended treatments will be shown to the user

CRUD Operations

- **Create** – Users can create symptom logs to track their health over time.
- **Create** – Users can create a review post for the medications they have used
- **Read** – Users retrieve condition suggestions
- **Read** – Users can see other users' medication reviews for a certain medication.
- **Update** – Users can update symptom selections to refine results.
- **Delete** – Users can remove symptoms and start a new search.

Low-Fidelity UI Mockup (Basic Wireframe Idea)



Project Work Distribution

Frontend Development (UI/UX)

- **Patrick** – Homepage design- mainly the symptom search and user input
- **Joey** – Design of the display to show the results consisting of specific conditions and severity information

Backend Development (Data & API Handling)

- **Patrick** – Implementation of the symptom/disease lookup functionality
- **Max** – Implementation of the medication database to work seamlessly with all other implementations
- **Joey -** Medication review creation and search system
- **Jackie** – Handling of server deployment & performance optimization