Preface

- **Clinical trials are hard to find. Patients will often have to find trials for themselves with little understanding of how clinical trials work. They must navigate this complex world while dealing with their condition/disease/disorder.**

- Most clinical trials that are regulated by the FDA must be registered on ClinicalTrials.gov.

- Principal Investigators will register the trials and include identifying characteristics about the trial: what age range is it for, which sex is it for, where is it located, what is a summary of the trial, etc.

- To enroll on a clinical trial, a patient must find contact information and call the clinical trial coordinator. This information is also in ClinicalTrials.gov

- The NCT number is the identifier unique to every clinical trial.

Solution

- Iteration 1 Goal:

  - Develop a website that allows users to find clinical trials using natural language. Allow them to also ask questions about the trial. Responses will be simplified and move away from complex medical terminology.

    - "I'm a 23 year old male who lives in Bethesda, Maryland. Can you find some trials near me for me for skin cancer?"

    - "Can you summarize this trial and what the outcome might mean to me if I enroll?"

    - "What does the trial say about side effects

    - "Who can I contact to sign up for this trial"

Technical Stuff

- I've been trying to use the OpenAI API but open to using other LLMs.

- Hugging face has a medical terminology model (have not used): https://huggingface.co/medicalai/ClinicalBERT

- Two options for retrieval of the study information:

  - ClinicalTrials.gov has an API that can be used to pull all of that information for all trials: https://clinicaltrials.gov/data-api/api

  - ClinicalTrails.gov also allows bulk downloading of JSON files with each characteristic broken out.

    - Need a database to store these JSON files and then search through them for specific json elements.

- Problems: I haven't been able to build the database to search through multiple trials. I've only been able to build a site that uses the OpenAI API and it's File Search feature to search a specific trial that has been uploaded.

Next Iterations = $$$

- Iteration 2 - n

  - Market to hospital systems and integrate into the assistant into their websites. **Will charge for this.** It will help patients find trials at that hospital more efficiently.

    - Example: A John's Hopkins Clinical Trial Assistant

      - "What trials do you have at Hopkins for skin cancer?"

  - Develop a user system that will remember what trial you are on. You can then ask the system questions in natural language about the trial while you are on it. **Hospitals will offer this to participants while on the trial; will charge hospitals for this service.**

    - Example: A Clinical Trial Buddy

      - "What do I have to do while I'm on the 2nd week of the trial".