Heart Failure Titration Agent

Resources

Drive Folder: HFMT-Agent/CS224v Project

Titration protocol

Example patient-agent conversations

Overview

Given high-level instructions, the titration protocol, a titration strategy selected by the physician (Single Drug or Multiple Drug), and patient information (e.g., current medication, demographics), you need to build an agent that will safely guide heart failure patients through medication titration.

Specifically, the agent will check-in with the patient. At each check-in, the patient can share their symptoms/adverse side effects, ask questions about the medication/protocol, adherence to the protocol, etc. The agent should answer any questions the patient has and then, given the patient information, suggest the best course of action based on the titration protocol to a physician. This action will then be approved by a physician (just have a call that returns "approved") and then communicated back to the patient.

The final outcome is whether the patient successfully follows the protocol.

Components

1. Simulating patients - you need to be able to simulate patients, you should be able to create realistic/varied/difficult patient conversations. See the Example patient-agent conversations.

2. Conversational agent - you need to build an agent that can communicate with the patient, collect necessary information from the patient (ask about adherence, how they are feeling, etc.), answer their questions

3. Decision procedure - you need to be able to take in the patient information and then, based on the titration protocol, make a decision about best course of action/suggested medications and dosage

4. Evaluation - evaluate the agent recommendation at different checkpoints, then also evaluate whether overall patient successfully follows the protocol

Challenges

- Evaluation setup: simulations of hard patients – LLM as a judge
- Informational: answering relevant questions (on top of titration)
- Out of happy paths – patients ask irrelevant questions, conditions that are not mentioned in the protocol,
- Understanding what the user is saying may be difficult
- Decision procedure is complicated
- Time series of information, need to be able to look at information over period of time
- Naturalness of the conversation
- Human evaluation in the end

Advice/Suggestions

- 2 groups can work together and tackle different parts/components
- Suggest just trying this out with a basic LLM/agent and identifying the failure cases and then going from there