

Assignment T2: Revised Project Proposal

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Date of meeting with IA Mentor: Thursday, 10/29 during class and Thursday, 11/5 during class

Modifications to T1 based on mentor feedback:

Added material is highlighted in the report.

- Added extra details and clarification about trial participants and researchers receiving email notifications.
- Clarified that app is for non-mobile users only.
- Explained that creating a chat app within the app is an extended goal.
- Explained how trials will be ranked by distance from participants.
- Added user stories and tests for trial ranking by distance and email notifications.

Part 1: Overview

1. What will your project do?

Our project will be a web application that matches researchers running clinical trials with prospective trial participants. Both types of users (researchers and prospective trial participants) will be able to create an account and log in. The prospective trial enrollee will be able to input information regarding their health status (age, gender, race, pre-existing conditions etc.) and requirements for trials (location, trial type, invasiveness, etc.). The researchers will be able to specify what their research is about and what types of patients they're looking for. Our web app will match the researcher to prospective enrollees who fit their criteria. **Once the participant has matched with a trial, both the enrollee and the researcher will receive an email notification.** Then, the enrollee and researcher will be able to message one another within our application, and discuss more specific trial requirements.

Our MVP will most likely not implement the messaging functionality and will simply send an email notification to a participant if they match a researcher's criteria. Furthermore, our MVP will only get specific information from the user (using drop-down menus instead of having the user input plain text) to simplify the data we will be storing. **Creating a chat app within the app will be an extended goal. We intend to make the app for non-mobile users only.**

2. Who or what will be its users?

Our application will have two types of users: researchers and prospective trial enrollees. Both types of users will have authenticated login and timeout/explicit logout.

3. What do you think you'll be able to show in your demo?

There will be a user interface that we can demo. We could show the process for each type of user: creating an account, logging in, filling out a form, getting matched with a researcher/enrollee, receiving an email after a match has been made, messaging a researcher/enrollee etc. We will also show how the list of trial matches for a participant is displayed and ranked by the distance between the participant and the trial.

4. What kind of data do you plan to store?

We plan to store health data about each prospective trial enrollee (i.e. age, gender, preexisting health conditions, etc.) as well as information about each trial in search of participants (i.e. desired age, desired gender, other criteria). We will also store messages between the trial enrollees and the researchers from the chat app as an extended goal.

5. What API do you plan to use and what will you use it for?

We are most likely going to use an API for the authenticated login as well as our messaging platform. Also, we will use the Google Maps API to calculate the distance between a trial enrollee and a researcher so that the trial will fit the participant's location criteria. Another public API we could use is Lexigram: an API that uses NLP to extract mentions of clinical concepts from text. If we end up having the users input plain text (to describe medical conditions for example), then this API may be helpful.

Part 2: User Stories

As a researcher, I want to find fitting participants for clinical trials so that I can get results.

My conditions of satisfaction are:

1. The participants I am matched with do not violate the criteria for my trial.
2. I am able to ask potential participants for further information if necessary.
3. I am able to communicate with potential participants.
4. I am able to fulfill my requirement for a number of participants.

5. I am able to create multiple trials.
6. I know which trial a participant matched to.

As a potential participant, I want to participate in clinical trials so that I can earn money.

My conditions of satisfaction are:

1. I will know the hourly rate associated with the trials I am matched to.
2. I have the ability to decline.
3. I can access information about the trial.
4. If I meet all criteria for a trial, I will be notified.
5. I am not matched with trials for which I violate screening criteria.

As a potential participant, I want to participate in clinical trials so that I can get access to treatment for a pre-existing condition.

My conditions of satisfaction are:

1. I will be matched with trials related to my pre-existing condition.
2. I will know the interventions associated with each trial.
3. All trials I am matched with have received IRB approval.

As a potential participant, I want to be able to view the distances of the trials I match with.

My conditions of satisfaction are:

1. When I log in, I will see a list of all trials that I have been matched to
2. If I have multiple trial matches, I will be shown them in order of ascending distance (closest trials first)

As a potential participant, I want to be able to receive a notification when I match a trial.

My conditions of satisfaction are:

1. I will receive an email notification with the trial I matched with
2. The email will redirect me to the trial information, where I will be able to accept or decline the match

Part 3:

User Story 1 Tests:

Case 1: A participant who matches a researcher's criteria is matched with that researcher.

- Create a participant with healthy medical data
- Create a trial looking for healthy people

- The test passes if both the participant and researcher are notified of the match.
- The test fails if either party is not notified of the match.

Case 2: A researcher is running multiple trials. They know which participants are matched with a given trial.

- Create a new researcher, and add multiple trials to their account.
- Create a new user matching each trial's criteria.
- The test passes if the researcher is effectively informed of which trial each participant matches.
- The test fails if the researcher cannot distinguish which trial a participant has matched or an incorrect trial is indicated.

Case 3: A researcher does not upload the IRB approval for their clinical trial.

- The researcher is not able to create the corresponding clinical trial

User Story 2 Tests

Case 1: A participant can accept the match by indicating that they would like to move further.

- Create a participant with condition x.
- Create a trial looking for people with condition x.
- The participant and the trial are matched.
- The test passes if the participant can accept the match by continuing a conversation with the researcher.
- The test fails if the participant is not able to accept the match.

Case 2: A participant can reject the match.

- Create a participant with condition x. Submit their
- Create a trial looking for people with condition x.
- The participant and the trial are matched.
- The test passes if the participant is able to reject the match by indicating their choice on the application and the match is removed.
- The test fails if the participant is unable to reject the match and the match is not removed.

Case 3: A participant has not input their medical history so that they can be matched with clinical trial criteria.

- The user is not able to become a part of the match database
- If there is a portion of the form that is not filled out, the user will not be able to submit it

User Story 3 Tests

Case 1: A participant gets matched with a trial related to their specific condition.

- Create a participant with condition x.
- Create an IRB approved trial looking for people with condition x.
- The test passes if both parties are notified of the match and the participant can see interventions.
- The test fails if either party is not notified.

Case 2: The participant has not specified their underlying condition.

- They will not be able to submit the form.

User Story 4 Tests

Case 1: A participant gets matched with two trials that each has a different location.

- Create a participant with condition x at location y.
- Create two separate trials looking for people with condition x at different distances from the participant, within their preferred range.
- Confirm the participant matches to both trials
- The test passes if the participant is notified of both matches and is shown the closer trial first.
- The test fails if the participant is not notified, or if the participant is not shown the trials in order of closest to furthest.

Case 2: A participant gets matched with two trials that are equidistant from them.

- Create a participant with condition x at location y.
- Create two separate trials looking for people with condition x at equal distances from the participant, within their preferred range.
- Confirm the participant matches to both trials
- The test passes if the participant is notified of both matches and is shown both matches in an arbitrary order.
- The test fails if the participant is not shown both of the trials in some order.

User Story 5 Tests

Case 1: A participant gets matched with a trial and accepts the match.

- Create a participant with condition x.
- Create a trial looking for people with condition x.
- Confirm the participant matches the trial.

- The test passes if the participant receives an email notification indicating that they've matched with the trial and the researcher receives an email notification indicating that the participant has accepted a match.
- The test fails if either party is not notified.

Case 2: A participant gets matched with a trial and declines the match.

- Create a participant with condition x.
- Create a trial looking for people with condition x.
- Confirm the participant matches the trial.
- The test passes if the participant receives an email notification indicating that they've matched with the trial but the researcher does not receive a notification.
- The test fails if the participant does not receive an email notification or the researcher does receive an email notification.

Case 3: A participant gets matched with a trial and ignores the match.

- Create a participant with condition x.
- Create a trial looking for people with condition x.
- Confirm the participant matches the trial.
- The test passes if the participant receives an email notification indicating that they've matched with the trial but the researcher does not receive a notification.
- The test fails if the participant does not receive an email notification or the researcher does receive an email notification.

Part 4:

We will be using JDK, Eclipse, Maven, CheckStyle, JUnit, Emma, Spotbugs, and SQLite.