

Problem Statement and Goals

ProgName

Team #, Team Name
Student 1 name
Student 2 name
Student 3 name
Student 4 name

Table 1: Revision History

Date	Developer(s)	Change
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
...

1 Problem Statement

[You should check your problem statement with the [problem statement checklist](#). —SS]

[You can change the section headings, as long as you include the required information. —SS]

1.1 Problem

1.2 Inputs and Outputs

[Characterize the problem in terms of “high level” inputs and outputs. Use abstraction so that you can avoid details. —SS]

Inputs from users will consist of various query prompts or data visualization requests. These should be easily done by users without technical experience. This will include:

1. Submitting queries by applying filter criteria related to the experimental sessions or the data itself. These could be but are not limited to: type of file, selected study/experiment, drug injection used in the trial, rat bodyweight, date and time of trial, etc...

2. Submitting queries using natural language. “show me trials with strong checking behavior after 5 injections” or “find sessions where rats showed compulsive patterns” are examples of this

3. Making requests for data visualizations such as behavioral metrics (seperated by injection type for example) or visually plotting trajectories of the rats based on their (x,y) coordinates.

Outputs to users will be constrained to two main categories.

Category 1: raw data records returned from a query for the inputting user to view or extract

Category 2: Data visualizations which include plots of rat trajectories or statistical or graphical displays of behavioural metrics of the rat subjects.

1.3 Stakeholders

1.4 Environment

[Hardware and Software Environment —SS]

2 Goals

2.1 Goal 1: Sound and Complete DBMS

A complete database schema must be developed for the purposes of th is project. This means that all pieces of data in the FRDR repository have been accounted for and are uniquely identified within tables in the DBMS. This also means that all metadata related to each piece of data are accessible for querying. Finally, the relations between data must be properly represented. Video, track files and trajectory diagrams related to the same session must have relationships between them.

Furthermore, a proper query framework must be set up and able to access the DBMS. The MVP form of this would just be writing SQL into a database request and recieve the correct result. This MVP would essentially just need Rest APIs set up to make a request to the database. However, this should be abstracted with a filtering UI that allows for non-technical people to easily make queries.

2.2 Goal 2: Sleek and Non-Technical UI

The main user base for this project will be academics with a psychiatric or animal related background and thus the user interface needs to allow for non-technical people to easily make rather complex queries. Our goal is for our front

end system to have an intuitive interface for filtering and searching for data. This would include features such as adding easily adding filters related to metadata annotations, a certain study, or the date of the trial. These filters would then be converted into an equivalent query, sent to the DBMS and return the relevant data. In a similar way, this UI will include natural language searching in which a sentence for what the user wants will be similarly converted into an equivalent query and the data returned.

2.3 Goal 3: Data Visualization/Processing Capabilities

Due to the large amount of data in the repository, processing and visualization are important in helping users more easily interpret and draw conclusions from the data. The first part of this goal is to successfully implement an algorithm that can identify behaviours in the trials and group them accordingly. The MVP of this is simply an algorithm that can distinguish between compulsive and non-compulsive behaviour.

On the visualization side, graphical displays of important metrics should be an option for users to view through the user interface. The different visualizations will likely need to be developed on an ad-hoc basis depending on the user needs but an example of an MVP for this goal would be to provide graphical displays of compulsive behavioural metrics based on the type of injection the rat recieved.

3 Stretch Goals

4 Extras

[For CAS 741: State whether the project is a research project. This designation, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

[For SE Capstone: List your extras. Potential extras include usability testing, code walkthroughs, user documentation, formal proof, GenderMag personas, Design Thinking, etc. (The full list is on the course outline and in Lecture 02.) Normally the number of extras will be two. Approval of the extras will be part of the discussion with the instructor for approving the project. The extras, with the approval (or request) of the instructor, can be modified over the course of the term. —SS]

Appendix — Reflection

[Not required for CAS 741 —SS]

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. What went well while writing this deliverable?
2. What pain points did you experience during this deliverable, and how did you resolve them?
3. How did you and your team adjust the scope of your goals to ensure they are suitable for a Capstone project (not overly ambitious but also of appropriate complexity for a senior design project)?