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Heartrate Behavior and

Analysis Tool (HBAT)

Sprint 2 Planning Document

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Team 3

# Sprint Overview

The main objective and focus of this sprint is to make the current prototype of the product more robust. In this sprint will aim to add features such as a graphical display of the data, as well as implementation of tabs of showcasing different trials.

**Scrum Master**: Phillip Thain

## *Scheduled Meetings*

* Weekly:
  + Monday, Wednesday, Friday 11:30-12:30.
  + Thursday, 6-8 p.m.
* Sprint 2 presentation:
  + Friday, April 7th

## *Risks*

The primary risk during this sprint is the risk of investing time into systems that may not actually be implemented in the final version of our product. For example, we would like to use a python-to-java tool in order to create a graphical display of any data, however, we are not yet sure if that will function as we expect. Similarly, we would like to find a tool that will build the project and run the build against a set of unit tests to ensure the integrity of our software. One tool we are researching Therefore, in order to minimize the risk of potential wasted time, we will be investing time into research and testing of different tools to ensure whatever we choose will ultimately be useful.

# Current Sprint Detail

## *User Stories*

**User Story 1:** As a researcher, I would like to process heartbeat data in order to analyze it against behavioral data.

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| --- | --- | --- | --- |
|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Finalize the data Algorithm | Ruhana | 5 |
| **2** | Finalizing the Parser | Manoj | 8 |
| **3** | Unit test cases for individual functions of the Parser Class | Manoj | 8 |
| **4** | Unit test cases for individual functions of the Algorithm Class | Ruhana | 8 |
| **4** | Write test inputs that that the parser can read. | Phillip | 4 |

**Acceptance Criteria:**

* Given that the program has access to heart rate and behavioral data, when the user requests to process that data then the program should return a dataset that reveals which phase a child is in during different points in the trial.

**User Story 2:** As a researcher, I want to see the output file in spreadsheet form from within the GUI window.

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|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Implement a visual table form | Rajith | 4 |
| **2** | Parse output data such that it can be easily sent to the GUI | Ruhana | 2 |

**Acceptance Criteria:**

* Given that a table GUI is implemented, when opening the GUI to view data, then behavioral, heartrate, and analyzed data, pertaining the the data they just analyzed, on a table.
* Given that the GUI access the analyzed data correctly, when the user opens the GUI to view data, then the user will be able to view correct information.

**User Story 3:** As a researcher, I would like to know if there are any errors with my input.

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| --- | --- | --- | --- |
|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | All inputs from the user should be checked for validity | Rajith | 1 |
| **2** | Create Exception classes for various errors that could occur within the parser/algorithm | Manoj/Ruhana | 3 |
| **3** | Throw those errors within parser/algorithm | Manoj/Ruhana | 2 |
| **4** | Catch those errors in the GUI and respond appropriately | Manoj/Ruhana | 2 |
| **5** | Create test cases to ensure exception handling is working as expected | Manoj/Ruhana | 6 |

**Acceptance Criteria:**

* Given the user gives the program an incorrectly formatted file as input, when the file is parsed, then an exception should be thrown letting the user know that the file is not formatted correctly.
* Given the user gives the program a file within invalid content (e.g. timestamps are corrupted, Behavioral test starts before heart rate is monitored), when the file is analyzed, then an exception should be thrown letting the user know that there was a problem analyzing the data within the input file.

**User Story 4:** As a researcher, I would like to be able to create visualizations of the data.

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|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Learn how to create graphs using Python libraries | Rajith | 2 |
| **2** | Create a graphical interpretation of an output.csv file | Rajith | 4 |
| **3** | Visualize the ‘phases’ of the experiment graphically | Rajith | 4 |
| **4** | Research Jython and how to utilize Python libraries in a Java environment, and implement into the current codebase | Rajith | 3 |

**Acceptance Criteria:**

* Given the user gives the program correct input, after the file is analyzed, then the data viewer should display a graph that is representative of the output.csv.
* Given the user gives the program correct input, after the file is analyzed, then the graph that is displayed should point out the important phases within the graph in some form.

**User Story 5:** As a researcher, I would like to check on multiple infants’ data in a tabular format to spot differences/similarities.

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|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Implement the procedural creation of multiple tabs with corresponding data | Rajith | 5 |
| **2** | Implement an ‘open’ command from within the toolbar to allow selection of an output.csv | Rajith | 1 |

**Acceptance Criteria:**

* Given the user opens a .csv file that represents the output of a processed trial, the program will then create a new tab within the data viewer to display that information graphically
* Given the user analyzes multiple trials of data at once, when the data viewer is being prepared, then it should open with new tabs already created for each trial.

**User Story 6:** As a developer, I would like to be able to create a simple way to build the project and test it all it once.

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|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Learn Maven/spend time with tutorials | Phillip | 4 |
| **2** | Learn to convert/ refractor the project to be used with Maven | Phillip | 6 |
| **3** | Understand how to import and use Unit testing | Phillip | 1 |
| **4** | Create a simple command or file to build the project and test it all at once. | Phillip | 4 |

**Acceptance Criteria:**

* Given that project is based on Maven, when a developer attempts to build the project, then it should build correctly reliably.
* Given that a project is based on Maven, when a developer attempts to build the project, it should run it against all unit tests before returning a successful build, while returning where errors and warnings are located.

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**User Story 7:** As a developer, I would like to easily be able to create test cases and verify that the software is functioning correctly .

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|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Research unit test systems, and decide on one. | Manoj/Ruhana | 2 |
| **2** | Create a unit test template to make creating tests easy. | Phillip | 2 |

**Acceptance Criteria:**

* Given that a unit testing system is decided on, when a developer wants to make a unit test, then it should hopefully be simple to implement.

**User Story 8:** As a developer, I would like to be able to close/transform GUI forms in order to reduce clutter on the desktop and improve performance.

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| --- | --- | --- | --- |
|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Restructure the GUI files such that there is a single controller for all the different views. | Rajith | 6 |
| **2** | Set the windows to open where the parent calls them on. (Important for dual screen) | Rajith | 1 |

**Acceptance Criteria:**

* Given that the GUI is restructured, when a user navigates to a new window, old windows should disappear.
* Given that the GUI is restructured, when a user navigates to an old window, the old window should contain previously input information so they don’t have to find/type it all again.

**User Story 9:** As a researcher, I would like “tool-tips” for features I may not understand.

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| --- | --- | --- | --- |
|  | **Description** | **Owner(s)** | **Time (hrs)** |
| **1** | Implement tooltip buttons | Phillip | 2 |
| **2** | Write succinct, informative tips to guide a user through the program where necessary | Phillip | 2 |

**Acceptance Criteria:**

* Given that tooltips are implemented, when a user is confused and clicks on a tooltip, a helpful message will appear to guide the user on what to do next or how a particular function works.

Backlog

## *Functional Requirements:*

#### Core Features:

1. ~~As a researcher, I would like to process heartbeat data in order to analyze it against behavioral data.~~
2. ~~As a researcher, I would like to input data in a form of a CSV file.~~
3. ~~As a researcher, I would like to export results in CSV files.~~
4. ~~As a researcher, I would like to be able to create visualizations of the data.~~
5. As a researcher, I would like to export visualizations.
6. ~~As a researcher, I would like “tool-tips” for features I may not understand.~~
7. ~~As a developer, I would like to organize information with classes~~
8. ~~As a researcher, I want to see the output file in spreadsheet form from within the GUI window.~~

#### Additional Features:

1. As a researcher, I would like to combine other sets of data and analyze them.
2. As a researcher, I would like to have a general summary of each experiment.
3. As a researcher, I would like to input data from Excel.
4. As a researcher, I would like to export results as an Excel file format.
5. As a researcher, I would like to drag and drop necessary files within the GUI to input them.
6. As a researcher, I would like to be able to process and organize data in batches.
7. As a researcher, I would like to customize how the data is batched together.
8. As a researcher, I would like to be able to create unique trials.
9. As a researcher, I would like to be able to access old trials.
10. As a researcher, I would like to check on multiple infants’ data in a tabular format to spot differences/similarities.
11. As a researcher, I would like to be able to organize batch data by characteristics of the data (Male vs. Female, Low vs High-risk, etc.).
12. As a researcher, I would like be able to specify different phases throughout the timeframe of the experiment.
13. As a researcher, I would like to graphically represent those phases.
14. As a researcher, I would like to customize the appearance of the graph, such as colors, fonts, icon shapes, etc.
15. As a researcher, I would like to be able to see a progress bar when processing datasets which take a long time.
16. As a researcher, I would like to be able to do certain functions in multiple ways (e.g. Export with menu bar, right click, and java.swing button).
17. ~~As a researcher, I would like to easily sync up the data inputs to start at the same time stamp.~~
18. As a researcher, I would like to be able to manually be able to type in the behavioral data at specific timestamps.
19. As a researcher, I would like to add event notes at specific timestamps.
20. As a researcher, I would like to be able to access patient data from within the program.
21. As a researcher, I would like to be able to calculate basic statistics for specific phases of data.
22. ~~As a developer, I would like to be able to create a simple way to build the project and test it all it once.~~
23. ~~As a researcher, I would like to know if there are any errors with my input.~~
24. ~~As a developer, I would like to easily be able to create test cases and verify that the software is functioning correctly .~~
25. ~~As a developer, I would like to be able to close/transform GUI forms in order to reduce clutter on the desktop and improve performance.~~

## *Non-Functional Features*

1. As a researcher without a programming background, I would like this to be easy to use.
2. As a researcher, I would like the application to work in both Windows and Mac operating systems.
3. ~~As a researcher, I would like to be able easily access the program through a graphical interface.~~
4. As a developer, I would like the project to be easily extensible.
5. As a researcher, I would like the program to be intuitive.
6. As a developer, I would like to create a file type to store patient data.
7. As a researcher, I would like the installation process to be easy.
8. As a researcher, would like to have it analyze quickly.
9. As a user, I would like the GUI to be responsive.