**FIT 3162/ FIT COMPUTER SCIENCE PROJECT**

**Team Management Report**

**Project title: Improving Software Testing using Software Fault Prediction Methods when data is highly imbalanced**

**Team:**

FIT3162\_MA\_4

**Team Members:**

* Tah Wen Zhong
* Jason Toh Zhern Wee
* Ethan Hor Sheng Jian

**Project Supervisor:**

Golnoush Abaei

# **Overall reflection**

Note: Meeting minutes can be found in the appendix of this document.

## Allocation of tasks to members

Throughout the project, we were able to identify each other’s strengths and weaknesses. As such, we allocated roles based on each member's capabilities for handling certain tasks. For contributions, it will be better for each of us to be responsible for a specific part of the program as the person carrying out the majority of tasks on that section of the program will have the most knowledge on that field and will remain the most suited member for handling tasks for that section. Below we will describe the roles and responsibilities of each member along with their contributions to the project.

Ethan's role in our team is the quality assurance manager as well as product owner. His responsibilities include handling and managing the project documentations such as meeting-minutes and weekly progress reports. In addition, he also examines the team’s rate of progress and determines whether our tasks each week are sufficient to complete our goals in time. For his contributions to the project, his tasks are focused on the data resampling techniques, models and the transitioning component of the user interface. For testing, he is responsible for testing the models, the resampling techniques and user interface.

Wen Zhong is the technical lead as well as scrum master. His responsibility involves identifying tasks each week and deciding on how the tasks will be delegated between each member. Additionally, he is also responsible for creating the template codes to ensure that every member’s code will follow a similar format. For his contributions to the project,his tasks are focused on the feature selection methods, models and the creation of the user interfaces. For testing, he is responsible for testing the models, the feature selection methods and the main algorithm.

Jason is the project manager. His responsibilities include overseeing the other members' work each week and hosting the meetings conducted each week. Furthermore, he also manages the Git to ensure that our system is maintained in a stable state each week. For his contributions to the project, his tasks are focused on the evaluation metrics, models and handling the data passed between each user interface transition. For testing, he is responsible for testing the evaluation metrics and useability testing.

## 

## Reflection on Team Management Success or difficulties

Despite having differences in our schedules, which sometimes made it hard to hold discussions over certain issues faced when developing the program, we still feel that the overall team management in our group was executed smoother than expected, with most of the weekly tasks being completed before each weekly discussion.

The weekly discussions held were essential for us as it helped us to recognize tasks that were to be completed each week. After each weekly discussion, we would then delegate tasks for each team member through WhatsApp. Once we completed delegating tasks, it would then be documented as part of the meeting minutes for each weekly discussion, so that each team member could refer to it should they forget what needs to be done.

On the other hand, there were definitely certain weeks where some of us were unable to finish the tasks within the given time, with the reason being the need to focus on assignments for other units. While this did result in the progress of our project slowing down, it did not really stop the project from being completed on time, as we already planned for this occurrence by starting the development phase of our project in the semester break. Another example of us having trouble completing tasks was when some of us experienced side effects from our vaccinations. To tackle this, we would help each other out in completing tasks whenever any of us were unable to do work.

In conclusion, this final year project was a good experience for each of us, as it teaches us valuable lessons about being in a project team. From the importance of meeting weekly deadlines to ensure smooth progression towards completion, to the importance of communication whenever someone is faced with difficulties in completing certain tasks within the given time frame. Overall, we are happy with the outcome of the project, and the lessons we are able to take away from it.

# **Appendix**

**MEETING MINUTES**

| **Subject** | Semester Break Meeting | | |
| --- | --- | --- | --- |
| **Date of meeting** | 21/07/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Receive feedback on the initial progress made for the program * Gain more understanding on how the final product would look like * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

**Note: Action items are to be completed before the next weekly meeting**

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Research on feature selection methods to be used in our program | Ethan Hor Sheng Jian, Jason Toh,  Tah Wen Zhong | To be done before the meeting in the following week |
| Implement pre-processing algorithms for datasets | Tah Wen Zhong |  |
| Implement CSV output algorithm to write out evaluation results for prediction models | Ethan Hor Sheng Jian |  |
| Implement evaluation metrics for evaluation of the prediction models | Jason Toh Zhern Wee |  |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 1 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 03/08/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Report on findings on feature selection methods to our supervisor * Receive feedback on the progress made for the program * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

**Note: Action items are to be completed before the next weekly meeting**

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Implement two new evaluation metrics, False Positive Rate (FPR) and False Negative Rate (FNR) | Ethan Hor Sheng Jian | - |
| Implement two new feature selection methods, Correlation-based feature selection (CFS) and Recursive Feature elimination (RFE) | Tah Wen Zhong | - |
| Fix errors that occur in the evaluation metrics for AUC and F1-score | Jason Toh Zhern Wee | - |
| Implement the combined algorithm for data preparation | Tah Wen Zhong | Complete this by 09/08/2021 |
| Implement the main algorithm for our program | Jason Toh Zhern Wee,  Ethan Hor Sheng Jian | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 2 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 11/08/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Receive feedback on the progress made for the program * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

**Note: Action items are to be completed before the next weekly meeting**

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Provide transition functionalities for each of the UI screens | Ethan Hor Sheng Jian | - |
| Implement the login screen for the UI | Tah Wen Zhong | Other UI screens were already created during the semester break |
| Allow the arguments from the UI to be passed in as parameters to the main program | Jason Toh Zhern Wee | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 3 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 18/08/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Jason Toh / Tah Wen Zhong |

| **Meeting Objective** |
| --- |
| * Receive feedback on the progress made for the program * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | Absent due to connection problems |
| Jason Toh | - |
| Tah Wen Zhong | - |

**Note: Action items are to be completed before the next weekly meeting**

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Implement the feature selection screen and add it to the transitions for the UI | Ethan Hor Sheng Jian | - |
| Fix the resizing issue that occurs with the UI | Ethan Hor Sheng Jian | - |
| Implement the chart view and table view for the results screen of the UI | Tah Wen Zhong | - |
| Fully connect the UI with the main program | Jason Toh Zhern Wee | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 4 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 24/08/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Receive feedback on the progress made for the program * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

**Note: Action items are to be completed before the next meeting**

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Begin testing for the base prediction models | Ethan Hor Sheng Jian | - |
| Begin testing for ensemble prediction models | Jason Toh Zhern Wee | - |
| Implement a progress bar for the program | Tah Wen Zhong | - |
| Begin testing for K-fold cross validation functionality | Tah Wen Zhong | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 5 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 07/09/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Receive feedback on the progress made for the program * Receive feedback on testing * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

**Note: Action items are to be completed before the next weekly meeting**

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Compare results of prediction algorithms with algorithms found in the research papers | Ethan Hor Sheng Jian | - |
| Begin testing for the pre-processing algorithms | Tah Wen Zhong | - |
| Begin testing for the evaluation metrics | Jason Toh Zhern Wee | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 6 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 14/09/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Show progress on testing * Discuss on potential improvements to be made to the program |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Evaluation report for prediction models | Ethan Hor Sheng Jian,  Tah Wen Zhong | Report is split into two separate documents, and is to be completed within the next 3 weeks |
| Begin integration testing for UI | Ethan Hor Sheng Jian | To be completed within the next 2 weeks |
| Begin integration testing for main program | Tah Wen Zhong | To be completed within the next 2 weeks |
| Begin integration testing for data preparation | Jason Toh Zhern Wee | To be completed within the next 2 weeks |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 7 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 21/09/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Tah Wen Zhong / Jason Toh |

| **Meeting Objective** |
| --- |
| * Show progress on testing and evaluation reports |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | Absent due to connection problems |
| Jason Toh | - |
| Tah Wen Zhong | - |

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Evaluation report for prediction models | Ethan Hor Sheng Jian,  Tah Wen Zhong | Report is split into two separate documents, and is to be completed within the next 2 weeks |
| Continue integration testing for UI | Ethan Hor Sheng Jian | To be completed within the next week |
| Continue integration testing for main program | Tah Wen Zhong | To be completed within the next week |
| Continue integration testing for data preparation | Jason Toh Zhern Wee | To be completed within the next week |
| Minor fix to the “About Us” section for the UI | Jason Toh Zhern Wee | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 8 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 01/10/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Show progress on testing and evaluation reports |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Evaluation report for prediction models | Ethan Hor Sheng Jian,  Tah Wen Zhong | Report is split into two separate documents, and is to be completed within the next week |
| Begin Usability testing | Jason Toh Zhern Wee | To be completed within the next two weeks |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 9 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 05/10/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Show progress on testing and evaluation reports |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Begin Usability testing | Jason Toh Zhern Wee | To be completed within the next week |
| Create the end user guide section for the user guides for the program | Tah Wen Zhong,  Ethan Hor Sheng Jian | - |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 10 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 12/10/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * Show progress on testing and evaluation reports * Discussion on further action to be taken for the project |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Amendments to system testing | Jason Toh Zhern Wee | To be completed within the next week |
| Create the technical guide section for the user guides for the program | Tah Wen Zhong,  Ethan Hor Sheng Jian | - |
| Begin writing the final report | Jason Toh Zhern Wee,  Tah Wen Zhong,  Ethan Hor Sheng Jian | To be completed before the submission dateline |

**MEETING MINUTES**

| **Subject** | Semester 2 Meeting 11 | | |
| --- | --- | --- | --- |
| **Date of meeting** | 12/10/2021 | **Duration** | 40 mins |
| **Start time** | 1:00 pm | **End time** | 1:40 pm |
| **Location** | Zoom Meeting | **Written by** | Ethan Hor |

| **Meeting Objective** |
| --- |
| * To clarify what is needed for the contents each of the reports |

| **Attendees** | |
| --- | --- |
| **Name** | **Note** |
| Golnoush Abaei (Supervisor) | - |
| Ethan Hor Sheng Jian | - |
| Jason Toh | - |
| Tah Wen Zhong | - |

| **Action items** | | |
| --- | --- | --- |
| **Action** | **Assigned to** | **Comment** |
| Work on completing the reports for submission | Tah Wen Zhong,  Ethan Hor Sheng Jian,  Jason Toh Zhern Wee | - |