FIT3161

Computer Science Software Project

Project Management Report

AI-assisted Online Psychotherapy Portal

Team: MA_26

Team members:

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1 Introduction

In this project, we integrate speech emotion recognition into the application of online psychotherapy in order to increase its effectiveness. With the advent of the Internet, people start to seek psychotherapy service online as it provides easier access than physical service. Therefore, the idea of this project is to increase the effectiveness of online psychotherapy portals by providing a video review of the client's decision making process during the therapy sessions. After the users upload a video of the therapy sessions onto the web application, the web app will use a speech emotion recognition model to identify the emotions displayed in the video. After that, users can search for a specific emotion and the web application will list the timestamps in which the clients displayed the emotions stated.

The role and responsibility of each team member is shown in the table below.

Group Member	**High Level Responsibility**
Bassel Abdelkader	Project Manager
Ho Yung Sheng	Technical Lead
Piong Zi Yao	Quality Assurance

Table 1: Responsibility of each member

2 Project Management

2.1 Introduction

Project management is the crux of a functioning and effective team. Without it, a team is like a ship without a rudder, moving but without direction, control, or purpose (Aston, B., 2021). Project management provides leadership, vision and motivation, which is necessary for the success of a project. Besides, it also provides us with a plan to execute the project so that we do not stray away from the main objective of the project and be able to complete the project within a realistic timeframe. Two of the most used methodologies in software project management are Waterfall and Agile. The Waterfall method (Diagram 1) originates from a symposium on advanced programming held in 1956. However, the first formal description of the waterfall model was only published by Winston W. Royce in 1970 (Westland, J., 2017). On the other hand, Agile is relatively recent which only appeared in 2001 with the publication of the "Manifesto for Agile Software Development," authored by 17 software developers (Westland, J., 2017). Both methodologies have their pros and cons, our decision on which one to use is elaborated in the following section.

2.2 Project management methodology

When deciding which project management methodology we are going to use, we agreed on using a hybrid between the Agile methodology and the Waterfall methodology since it incorporates the best of both methods. For people who are used to and comfortable with only one of the two methodologies this could be quite problematic, but the Agile-Waterfall hybrid method can be of great use in software development. The Waterfall model is used during the first phase of our project, when we do the project design and planning. And when we moved on to the implementation phase, we switched over to the Agile model while we followed the initial plan decided using the Waterfall method.

The main benefits that could be gained from using such a hybrid approach is encouraging collaboration between team members during implementation where a lot of changes are expected to happen. Another benefit would be when the project has a fixed budget and deadline yet still the project could benefit from agile's rapid planning, design and analysis. The main reason the two methodologies could actually work cohesively is that Agile is more of a mentality and a paradigm while Waterfall is a strict methodology. Therefore, it is viable to use the Agile philosophy while sticking to the strict waterfall methodology.

Since we were interested in incorporating a hybrid approach, our vision was to determine the nature of the problem needed to be solved and then determining which methodology would be suitable for it. Since there are many elements of the agile methodology that we tried to incorporate to try to benefit our development process from it. We were able to use such a hybrid method by planning, designing and defining requirements using waterfall, but developing, deploying and testing in short sprints using Agile. In addition, we actively utilize communication tools such as Zoom and WhatsApp to aid information exchange and traceability across the cycle of development. Moreover we tried our best to define standard compliance expectations and focused on them in our planning phase.

What such a hybrid approach allowed us to do was retain the clarity and tracking system of the waterfall methodology while still embracing the adaptability and flexibility of agile. This allowed us to, for example, begin independent development of some modules or packages while the planning phase is still in progress. The development phase follows the traditional agile principles.

2.3 Resources used

The main communication tool we use is WhatsApp. We use it to distribute our workload, ask for clarifications and discussions. We list down the task allocation and keep track of it in our team's group chat. The main focus is to let team members be aware of their task distribution regardless which tools are being used. Sometimes it's a bit hard to keep track of all the allocated tasks, so we think it would be better if we

could use tools like Trello to achieve this purpose. For video calling, we mainly use zoom for our meetings. Its unlimited minutes and screen sharing functionality suit our needs perfectly. Besides, we use teamgantt to create our gantt chart as shown in Diagram 2.

2.4 Risk management

Risk refers to an event that might happen but hasn't happened yet. It can be either positive or negative, but its consequences can be minimised if it's unfavorable (Kalemba, A., 2020). The most crucial step towards risk management is to identify them. After identifying and classifying the risks, managing them will be much easier. The process of identifying risks is essential to determine the success or failure of a project. The purpose of risk management is to discover the risks and threats that we can control and prepare for those that we have little to no control over. The analysis will be used to create a risk register which will gather all identified risks and come out with a procedure to overcome them. For example, one of the risks is the risk of not meeting deadlines. As this is one possible threat to our project, one way to deal with it is to start doing certain tasks earlier than scheduled so that we can have more time for unexpected situations. The risk register is shown in Table 2.

2.5 Limitations

During our project life cycle, we face a few limitations which I will be talking about. The first limitation we encountered in our project life cycle is scope limitation. The front end web GUI of this project required our team members to have a certain amount of HTML5/Django knowledge which in our case none of us have that aspect of knowledge. In this case, we need to pick up this skill from scratch and go through many different tutorials online to help us start our project. Not only that, the speech emotion recognition model also requires a certain level of understanding in deep learning which itself is a complex subject. The second limitation we faced was time constraints. All of our team members took other subjects and most of the time were busy with their assignments. Most of the time we will just communicate through WhatsApp to follow up on each other's progress and allocate new tasks. Moreover, due to the recent covid-19 pandemic, we weren't able to meet up physically and discuss our project's requirements and progress. I personally think it would be much better as we could be more productive in our discussions.

2.6 Reflection on success

Based on all the problems we faced above, we managed to solve most of them. Based on this experience, we have learnt that communication between team members is crucial to get stuff done and solve problems. The thing we wish we could have done is to have more frequent meetings. By doing so, we can maintain a common understanding of current progress, hence more organized and well-aligned.

Teamwork is also very important in a group as all of us must work together to get tasks completed in an orderly manner. Moreover, we all have learnt about the importance of time management throughout this project. Although we are juggling between different units and other priorities in life, it is still important for us to complete our tasks in time. Lastly, this experience also taught us to be keen to learn new things which is very important when we encounter new challenges. Most of the challenges and limitations we face will prepare us for the working environment we are all gonna face in the future after our graduation which is beneficial for us all.

3 Conclusion

In conclusion, throughout this whole project, we as a team had encountered many problems in different aspects such as communication and skill set limitation which we were all mostly able to solve after some discussion and research. As for our project methodology, we initially plan to use waterfall methodology throughout our project lifecycle, however, in the middle of development, we changed that to an agile method as we find it more practical for our team's working style as we would often give feedback to each other's progress. In each development stage we will try our very best to stick with the requirements that we had set during the previous semester for our project to get the best possible result. As the final week is approaching, we will increase our weekly meeting frequency to keep up with the workload required to finish our project.

4 References

Aston, B., (2021). *Why is Project Management so Important to An Organization*
https://thedigitalprojectmanager.com/why-is-project-management-important/

Westland, J., (2017). *Project Management Methodologies - An Overview*
https://www.projectmanager.com/blog/project-management-methodology

Kalemba, A., (2020). *IT Project Risk Management: 7 Most Common Software Development Risks*
https://tsh.io/blog/it-project-risk-management/

5 Annexes

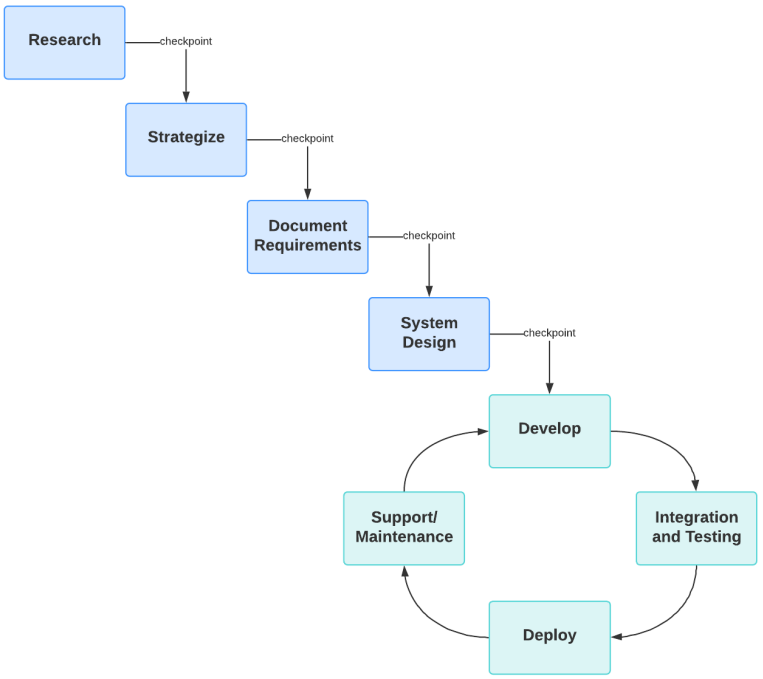

Diagram 1: Waterfall methodology

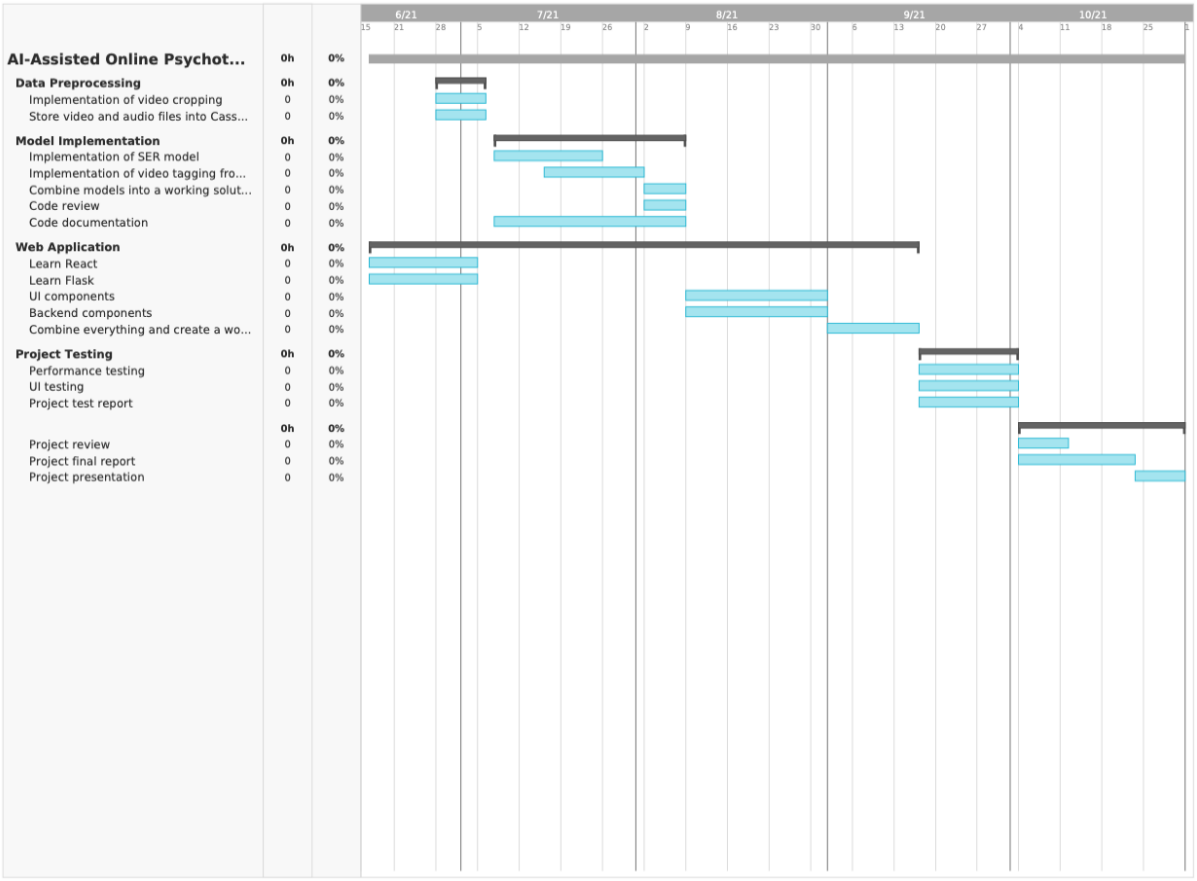

Diagram 2: Gantt chart

Prepared by: Team MA_26															
No.	**Rank**	**Risk**	**Description**	**Category**	**Triggers**	**Root Cause**	**Potential Responses**	**Risk Owner**	**Probability**	**Impact**	**Status**	**Score**		**Legend**	**Numerical**
R1	5	Poor deep learning model choice	Our system uses several deep learning models. Some of the models might fail to create an acceptable accuracy	Technical	The predicted emotions in the output has bad accuracy	The choice of deep learning model is not suitable for SER	Experiment with different DNN algorithms before deciding on which to use	Tech lead	3	4	Open	12		Very low	1
R2	3	Long processing time	Our system will include emotion recognizing, tagging, video cutting and video concatenating, so the processing time might be long	Product quality	Long waiting time when the system is run using the test data	Model is too complicated and not enough processing power in our command	Optimise the code and maybe find access to high power gpu	Quality assurance	5	5	Open	25		medium	5
R3	1	Bad output video quality	The output video has bad quality with choppy editing	Product quality	The content of the video is not pleasurable to enjoy	Our model detected change of emotion mid sentence	Set a limit on how short a video snippet can be, or do not cut in mid sentence	Quality assurance	7	8	Open	56		high	7
R4	2	Predicted emotions not accurate	The output video does not match the emotion searched by the user	Product quality	The predicted emotions do not match with what the user has searched	Our model does not predict the emotion consistent enough	Experiment with different combination of features and classifiers	Tech lead	7	7	Open	49		Very high	9
R5	6	Product delivery delay	The project development might take longer time than expectation.	Schedule management	Our team fails to meet deadlines and milestones	Our groupmates are taking other units with heavy workload	Update progress status regularly. Plan schedule with reasonable time given for every task	Project manager	3	8	Open	24			
R6		Lack of commitment	Team members do not put in acceptable effort into the project	Team management	Subpar product, inharmoneous work environment and missed delivery date	Different expectations and attitude from each member	Redistribute workload so that the negative effect can be minimized	All	6	8	Open	48			
R7		Lack of communication	Team members do not update progress and communicate efficiently	Team management	Duplicated tasks and decreased productivity	Don't have an initiator or members are busy with other work	Have weekly meetings that all members are encouraged to attend	Project manager	8	4	Open	32			
R8		Absence of a team member	Team members might get sick	Team management	Team member is sick and unable to deliver any result	Covid-19, flu, fever, etc	The healthy team members will shoulder the responsibility of the sick until they recover	All	1	9	Open	8			

Table 2: Risk register