Team 24 - MindSpace

Part 1 Business Case

Executive Summary

The purpose of the business case – MindSpace is to solve the current mental health issue among the society by utilising the advancement of technology in this current era. The development of MindSpace is a phone application that phone users can access easily and develop emotional awareness. It provides two main functions. Firstly, the Natural Language Processing (NLP) AI is used to track user's social media posts and their phone keyboard data and analyse it accordingly. Secondly, users can track and understand their past emotions record, so that accurate solutions are able to be provided according to their needs.

Even though there are few phone applications of emotions tracking and analysis, these products does not provide high accuracy and it is inconvenient to use. Therefore, MindSpace was created to solve these problems through the automatic collection of user's social media data and NLP analysis.

WHAT is our project about?

Our team is going to develop a mobile application called MindSpace that aims to help users enhance their emotional awareness and provides users resources to cope with their emotional problems. Our team is responsible for designing and developing the frontend of the mobile application using the sample data provided by our clients, Dr Thushari Atapattu and Dr Menasha Thilakaratne. Our client's lab, the Language Technology for Social Good (LT4SG) is responsible for developing the backend of the mobile application, which involves data processing with Natural Language Processing artificial intelligence. MindSpace is a cross-platform app, that will deliver consistent experiences across for mobile, desktop and web. MindSpace will study users' language and provide following 5 major features:

1. Identify emotions

MindSpace utilizes the power of NLP to automatically analyse user's social media and keyboard input data and presents user's emotion intensity with interactive graphs and charts, so to help users to identify their current emotions.

2. Analyse triggers

The NLP algorithm developed by LT4SG can automatically identify what triggers the user's emotions. This enables MindSpace to present triggers of each emotion, so users can get a better understanding about the major causes of their emotions.

3. Make reflections

MindSpace guides users to make reflections about the reasons behind emotions. Users can reflect for emotions experienced during the day, as well as a reflection to highlight the incidents or thoughts that could trigger those emotions.

4. Help with strategies

MindSpace provides useful resources to help users develop their emotional awareness and formulate strategies to deal with their emotional problems in constructive ways. These resources include articles and videos.

5. Track the progress

MindSpace provides users a calendar view showing how different emotions change over time. With this feature, users could identify patterns about changes of their emotions and from that learn to gain back their control of emotions.

WHY is it important and worth doing

MindSpace aims to help people to better cope with their emotional problems through enhancing their emotional awareness, especially during the COVID-19 pandemic. Emotional awareness is an important mental health attribute. Deficiency in emotional awareness could be related to many psychological disorders like depression (Monti & Rudolph, 2014), anxiety disorders (Kranzier et al.,

2015) and post-traumatic stress disorders (Frewen, Dozois, Neufeld, Lanius, 2011). On the other hand, research showed that people with good emotional awareness are likely to be successful at work (Hartung, 2020). While pain and sadness could be inevitable, emotional awareness could be developed with practice and results in better mental health (Baker and Richard, 2018).

MindSpace helps users develop their emotional awareness by reporting emotions automatically detected by NLP from social media data. It is worth doing during COVID-19 pandemic because research showed that during COVID-19 lockdown, Twitter users posted more tweets and showed more negative emotions in their tweets (Arora, Chakraborty, Bhatia and Mittal, 2020). Moreover, social media is an important resource of understanding one's emotion. Social media mostly dominates phone user's mobile time nowadays as people spend 50% of their mobile time on social media apps (WeAreSocial, 2020).

Compared to other similar products which require regular data entries by users, MindSpace offers us a more convenient and accurate way to track our emotions. Firstly, data collection in the app is automatic. Secondly, emotion detection by NLP is not affected by user's bias and misjudgement.

GOALS of this project

MindSpace aims to achieve in order to be a success. As mentioned, the project MindSpace is cooperating with Language Technology for Social Good, in which the lead and co-founder is our client Dr Thushari Atapattu, the lab will be responsible for the backend about collecting data from user, NLP and data analysing. While our team will take care of mostly the frontend to visualise the analysed data, displaying user's different emotions and emotion triggers, tracking user's emotion from time to time, providing strategies about how to cope with specific negative emotions.

We mainly focus on implementing the frontend function of MindSpace; thus, the difficulties of the project will be appropriate, leading us to be able to finish the project in one semester. In terms of technology stack, as discussing with our client, we decided to build MindSpace as a hybrid app using Ionic framework and developing with Angular, which has lowest investment in effort and time compare to native and hybrid-native framework, so that we can pick it up by self-studying online effectively, not to mention that one of our team members has previous experience in using Ionic framework. Besides, despite of the fact that it is more beginner-friendly, there is no noticeable performance difference compare to native and hybrid-native framework. Our current UI design of MindSpace is designed on an online platform called Figma which allows online collaboration, with the clear picture of the developed UI design, the flow of App development will be smoother as well. Therefore, our project is feasible to be finished in one semester.

Part 2 Iteration 1 plan

For the first milestone, our team aims to implement the display and functionalities of five screens – Landing, Login, Signup, Permission(frontend) and Home(frontend), as well as to implement empty pages for the rest screens - Explore, Insight, Strategies and Timeline, with routing navigation working.

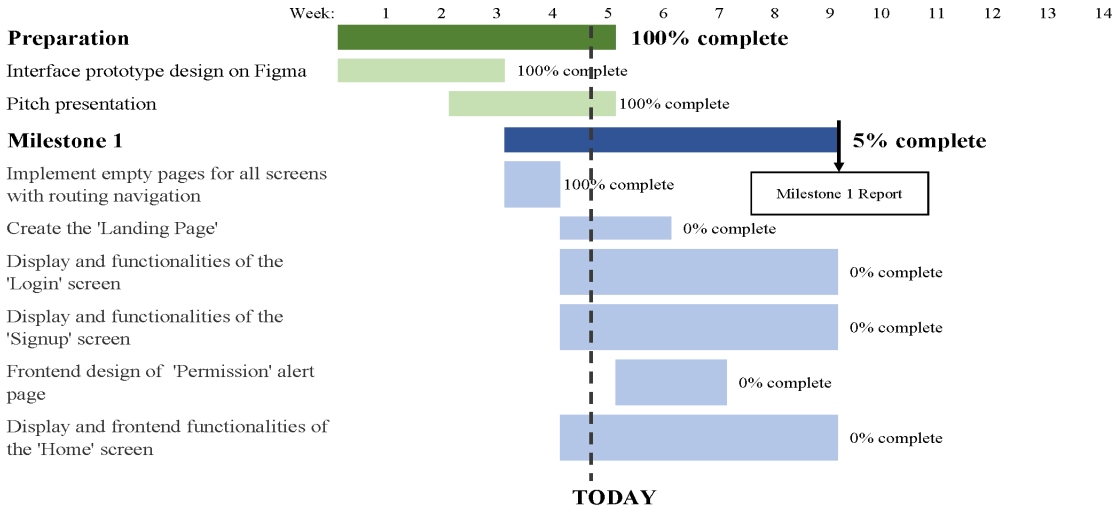

Table 1: Gantt chart of first milestone

Milestone 1	Activities	Projected Outputs
Define the first milestone to be completed by end of week 7	List activities required to achieve 1st milestone	Define projected outputs from your work plan
This milestone will create a prototype and demo of MindSpace application. By this milestone, the application shall finish the prototype design. Implement a simple version of frontend of 'Landing page', 'Permission' and 'Home' and full functionalities of 'Login', 'Sign up' page. The application shall be implemented to utilise be able to display all output emotion analyse results on a single page with client's sample data.	Create empty pages with functioning routing and navigation	A demo mobile app with 'landing', 'login', 'signup', 'permission alert', 'home', 'explore', 'insights', 'resources and 'timeline' pages with empty content and buttons with navigation working. Buttons on the 'landing' page will trigger navigation to 'login' and 'signup' pages. A Button on 'login' and 'signup' page will trigger navigation to the 'permission alert' page. A Button on the 'permission alert' page will trigger navigation to the 'home' page. A Button on the 'explore' page will trigger navigation to the 'resources' page. There will be tabs at the bottom of screen for 'home', 'explore', 'insights', and 'timeline' pages for shifting view from one to another.
	Create the 'Landing Page' as the first screen after opening the application	A Landing Page screen with a login button and a signup button so that users will be redirected to the 'Login' screen after tapping the login button, and will be redirected to the 'Create your Account' screen after tapping the 'Sign Up' button
	Implement the 'Login' screen	A 'Login' screen with a Google login button, a Facebook login button, and a form handling email-password authentication, so that users can later login with Google authentication, Facebook authentication or email-password authentication. Users will be redirected the 'Explore' screen after authentication.
	Implement the 'Sign up' screen	A sign-up page that allows users to create new account with email and set up password. It also provides a Google login button and a Facebook login button for login with Google authentication and Facebook authentication. Users will be redirected the 'Explore' screen after signing up or authentication.
	Frontend design of 'Permission' alert page	A page for requesting permission to access users' keyboard inputs data. The permission functionalities will not be implemented for this milestone.
	Implement the display and frontend functionalities of the 'Home' screen using sample data provided by clients	A page that displays client's NLP's output sample data into Map and List. Map is a component representing the Top 5 emotions in different colours and sizes based on their frequency. Below the Map, a list will be used to show all other identified emotions with frequency number in a day.

Table 2: First milestone plan

Team organization

Event	2 weeks	Time	Methods
Sprint * 1	2 weeks		
Sprint Planning	3 hours	Once per Sprint	Face-to-face
Scrum Meeting	15 mins * 3 *2 weeks	Every Tuesday, Friday, Sunday 9AM	Zoom
Sprint Review	1 hour	Every Tuesday 2PM	Zoom
Sprint Retrospective	1.5 hour	Once per Sprint	Face-to-face

Table 3: Schedule meeting time

The sprint planning and retrospective meeting will be held once two weeks. The first retrospective meeting will be at week 7.

External communication

Due to our client's preference, our team's external communication with stakeholder will mainly be remotely. We will utilise Zoom, emails, shared documents on OneDrive and shared prototype with Figma to communicate and collect feedback. The client meetings are set regularly on every Tuesday 14:30 in Zoom. Agenda would be sent to client via email two days before the meeting.

Internal communication

Internal communication is a combination of face-to-face, Zoom, GitHub, Slack and OneDrive.
Sprint Planning and retrospectives are held face-to-face. Scrum meetings are held over Zoom.
Internal communication tool is mainly on Slack. Our team arrange workspace and channels to communicate, report progress, shared documents links, post notice within the team.
GitHub is used for version control, manage user story and backlogs.
Regular internal Zoom meeting every Tuesday right after client meeting so that we could better consensus on client's advice, and every Friday afternoon to see each other's progress and prepare agenda for next client meeting.

Role and Responsibilities

In this project, our team has the following roles and responsibilities:

- Scrum master, responsible for facilitating communication and information exchange within team with external stakeholders; preparing meeting agenda; monitoring project progress, allocating tasks to team members and providing timely feedback
- Secretary, responsible for taking minutes for client meetings
- Product developer, responsible for collaborating with each other with an agile approach to design product user interface, software architecture and graphics; and implement the tasks assigned by the scrum master
- To facilitate agile development, in this project every team member is product developer responsible for planning and working for product development. Two team members take up one additional role and the arrangement is as follows:
  Scrum Master:
  Sprint 1: Ka Yiu Eric Ma; Sprint 2: Yingyao Lu; Sprint 3: Yiu Yeung Ng; Sprint 4: On Ki Ng
  Secretary:
  Sprint 1: Yiu Yeung Ng; Sprint 2: On Ki Ng; Sprint 3: Ka Yiu Eric Ma; Sprint 4:Yingyao Lu