



SECP1513 Technology & Information System Section 9

Design Thinking Project Report

**Topic: BIG DATA AND ARTIFICIAL
INTELLIGENT (AI) NEW INNOVATION**

Group Name: Tech Pioneers

Project Name: On My Way

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1.0 Introduction

In this technology-driven era, Artificial Intelligent (AI) has rapidly spread across the globe. You will notice that AI is gradually becoming an integral part of our daily lives. It enhances efficiency and convenience, making our lives easier. As a result, people are now increasingly reliant on AI. AI has been used to do many things, like answering questions with chatbots, recommending products or movies, driving cars and creating things like text, pictures, or music. Even so, some users struggle to harness the full power of AI due to complex tools and a lack of intuitive solutions. This limits the accessibility of these technologies for the users.

1.1 Objective

This project aims to use the design thinking method to develop an AI-driven solution that simplifies the use of big data.

1.2 Methodology

Design thinking is a way of solving problems by focusing on the needs of users. It involves understanding what users need, thinking of creative solutions, and testing those ideas to see what works better. Design thinking helps create solutions that are practical and user-friendly. The process includes five steps, which are empathize, define, ideate, prototype, and test.

1. **Empathize:** This phase is basically searching and understanding the customer's views. It can be done by interviews, group discussion, and creating surveys to the society.
2. **Define:** After gathering the information from the users, we have to clarify the problems that most users consider and give the appropriate solution to the users.
3. **Ideate:** This step includes the brainstorm that we could think of various interactive ideas to give an optimized and real-time solution to the problems.
4. **Prototype:** After thinking of a solution, we will start to design a simple version of the prototype. This could ensure that our ideal solution can be verified in real life.
5. **Test:** We will invite the users to test our prototype and give feedback for their personal experience. We will also ask questions to figure out how to improve our prototype.

2.0 Detail Steps

In January 2025, our group was assigned a task to create a prototype based on the topic of Big Data and Artificial Intelligent New Innovation. After discussing our given topic, we considered choosing between the service industry and the transportation industry. Ultimately, we decided to focus on innovation in the travel and navigation sector within the transportation industry and the information technology industry. We collected user feedback on various problems encountered every day when using navigation apps like Google Maps and Waze. In order to overcome this, they would need a more accurate, convenient, interactable and big data model to use with.

2.1 Empathize

The first step we researched was to explore navigation systems for analysis and investigation at applications in both the transportation industry and the information technology industry. The research helped us understand the navigation background and the existing challenges. To receive a deeper understanding of user needs and experiences, we conducted an interview with a user and a survey using Google Forms to collect feedback from users regarding their navigation usage. This survey allowed us to identify expectations, pain points and preferences of users when interacting with navigation systems, providing suggestions about the improvement of navigation for the next define, ideate and prototype.

2.2 Define

After the empathizing stage, we discuss the information gathered from Google Form. We know the problem with the present navigation system. We have identified the features of our design thinking by analyzing their answers in the survey.

2.3 Ideate

In this stage, we clearly know the navigation system problem after listing and categorizing the problems. We process brainstorming where we generate new ideas about Big Data and Artificial Intelligence. Each group member's idea was gathered. After that, there were several solutions that we were able to find for the problems.

2.4 Prototype

In this stage, we complete the design and make our prototype. The prototype is based on the ideate stage. After deciding the features and ideating, we divided the task among ourselves and designed the prototype of the new navigation invention.

2.5 Test

In this final stage, we have completed designing our prototype of the new navigation invention. Users tested some of the features of our prototype, so we checked its functions and features and got their opinions and feedback on our prototype.

3.0 Detailed Descriptions

3.1 Problem

Current navigation apps lack an algorithm that is capable of analyzing a new route that does not exist in the database. It also has limited functionality that does not meet users' specific needs. Users have found the app is challenging to use while driving. Besides, users are also frustrated with the outdated route data. Users will acquire satisfaction if these problems can be addressed. In addition, real-time navigation apps will also provide users with a safer and smoother journey.

3.2 Solution

After the brainstorming session, our team has acquired numerous solutions to address the limitations of current navigation apps. Each idea will be evaluated based on its practicality, potential impact, and alignment with the user's needs. Ultimately, the proposed solution includes the integration of voice recognition, weather forecasts, machine learning, and an AI chatbot into our prototype. The primary objective of voice-driven navigation is to enhance driving safety. The voice recognition features empower users to control the apps without manual inputs, which improves accessibility while driving. Moreover, weather data is integrated into the app systems. It provides route adjustment based on initial weather conditions, which protects users from potential weather hazards. Besides, AI-driven analysis can analyze user behavior and input to suggest optimal routes. Additionally, the navigation system is more dynamic and up-to-date, adapting to real-time changes to deliver a more precise and efficient route to the users. Lastly, the app features an AI chatbot that provides immediate responses to users' queries. The concept is to assist the user during unpredictable circumstances. The chatbot can provide the user with personalized support and enhance their experience.

3.3 Team Working

Roles and Responsibilities

Wong Jia Kai

Role: Leader

Responsibilities: Overseeing the entire project and facilitating brainstorming sessions

Neoh Sun Hong

Role: Researcher

Responsibilities: Conducting user interviews, and surveys, and analyzing user needs

Tan Jun Quan

Roles: Prototyper

Responsibilities: Creating and testing prototypes to gather feedback

Tien Wei Sheng

Roles: Reporter

Responsibilities: Documenting the design thinking process and preparing detailed research data

Ezz Eddin Bin Marwan

Roles: Video Creator

Responsibilities: Producing a project overview video and preparing presentation slide

The assignment of roles and responsibilities was accomplished during the first meeting. The team comprises 5 members: Wong Jia Kai, Neoh Sun Hong, Tan Jun Quan, Tien Wei Sheng, and Ezz Eddin Bin Marwan. All team members are actively involved in the project, contributing to brainstorming sessions. Team meetings are conducted regularly to keep track of the progress, ensuring every team member stays informed and does their work. Webex and Google Meet were used to ensure effective communication among all team members.

4.0 Design Thinking Assessment Points

4.1 Assessment Timing

Upon project completion, an evaluation was conducted on the final prototype to compare it against the initial goal and user needs. The assessment indicated that the prototype generally met the expectations, with users providing positive feedback on its intuitive design and seamless integration of features. However, some shortcomings were identified, particularly regarding system performance under heavy load. Overall, the demonstration was successful, and the insights gathered will be useful for future refinements. Evaluations were also carried out at each phase transition to achieve phase objectives. It ensures that the current phase meets the requirements before moving forward to the next phase. The evaluation allows our team to highlight areas that needed modifications and improvement. By employing an iterative process, we continuously improved and built upon each phase effectively. Regular evaluations were crucial throughout the project, helping to mitigate potential risks and ensure smooth phase transitions. These steps ensured that every phase built upon the solid foundation of the previous one.

5.0 Design Thinking Evidence

5.1 Empathy

Our group has conducted surveys through Google Forms to gather insights from potential users. Additionally, we conducted an interview to understand better the challenges and problems users face.



4. Based on Question 3, if yes, please give your reasons.

Your answer

5. What problem you often faced when using the navigation? *

- Traffic jam
- Track to the terrible path like narrow or muddy path
- Track to the more longer path
- Other: _____

6. Do you think the navigation app is helpful to you? *

- Yes
- No

7. Do you think Artificial Intelligent (AI) is more helpful on the navigation app? *

- Yes
- No

8. Please provide your suggestion about the improvement of navigation app, Thank You!

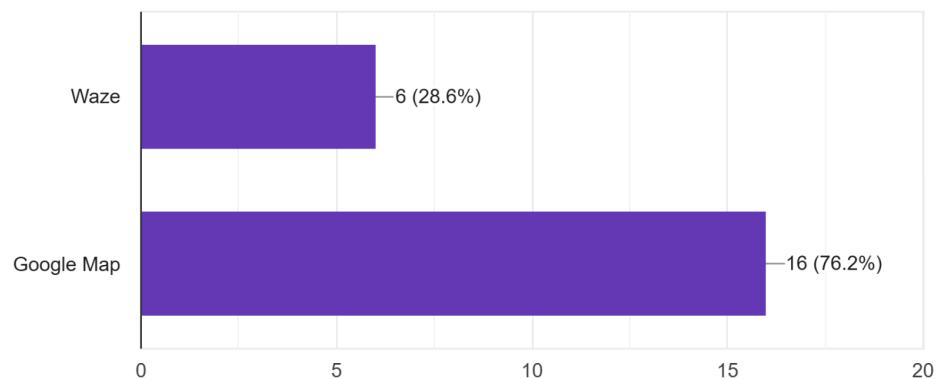
Your answer

5.2 Define

We collected all the information from the Google Form and the interview session during this phase. This process helped us better understand their problems, which allowed us to customize our solution to address their needs and challenges effectively. Below are the results from the Google Form:

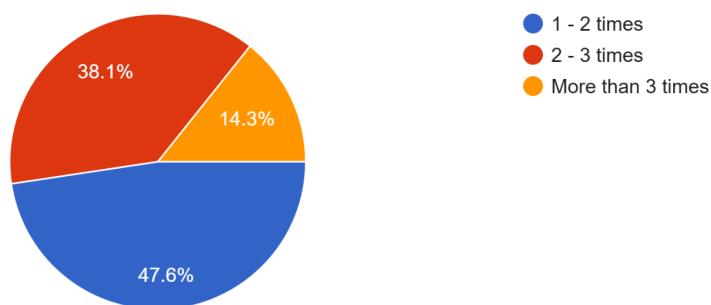
1. Which navigation you often used?

21 responses



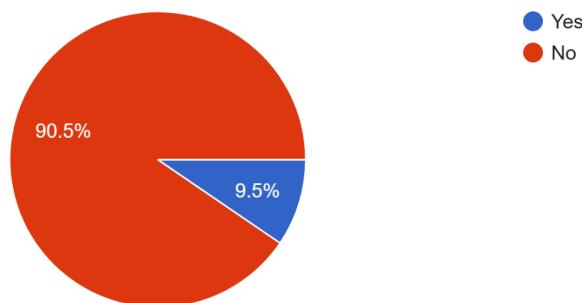
2. How long do you use navigation app in a week?

21 responses



3. If you are already familiar with the destination, do you still use the navigation app when you're driving?

21 responses



4. Based on Question 3, if yes, please give your reasons.

3 responses

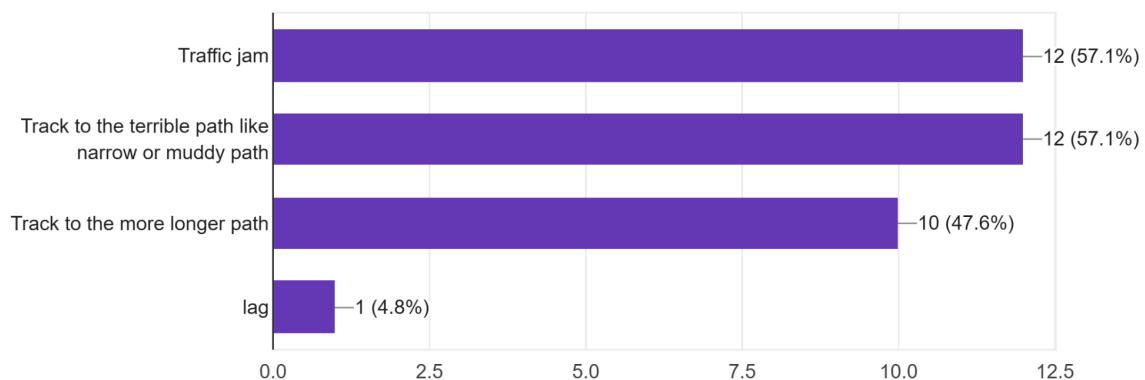
Does not feel lost during travelling

to avoid traffics

Because I already know the location and position of the place.

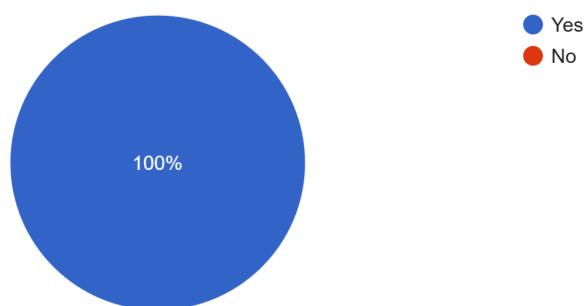
5. What problem you often faced when using the navigation?

21 responses



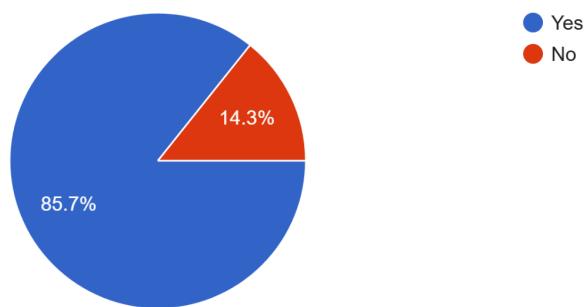
6. Do you think the navigation app is helpful to you?

21 responses



7. Do you think Artificial Intelligent (AI) is more helpful on the navigation app?

21 responses



8. Please provide your suggestion about the improvement of navigation app, Thank You!

5 responses

To update the roads & estimated time quicker when accidents no longer affect the road

More precise geographical location

Avoid from suggest routine which traffic jam always occur.

Make them choose a shorter path for destination

add the picture for destination for customer to check the address is right or false

5.3 Ideate

In this phase, we have started our discussions to analyze all potential solutions to tackle the problems posed by the survey and interview. After brainstorming, we have come up with a solution: On My Way application application.



Discussion

5.4 Prototype

After finalising our solution in this phase, we use the information collected as our guide to ensure that everything is aligned with our customers' needs.



Product Prototype Interfaces



Prototype development

5.5 Test

After our prototype is fully developed, we show it to several users so they can test it out. Most users gave positive feedback on our prototype and ideas to further improve it.



Prototype testing

Reflection

Tan Jun Quan:

1) What is your goal/dream with regard to your course/program?

I choose to study this course in the beginning because I love playing online games and I have an interest in the game field. Hence, I would like to say that my dream is to become a game designer, so I could create my own desired games.

2) How does this design thinking impact on your goal/dream with regard to your program?

After doing this design thinking, I realize that this method is very helpful for my dream. When starting to create a new thing, I will gather the opinion from the society to determine which solution is the best way to solve the problem. I would also follow the popular trend to collect more inspiration.

3) What is the action/improvement/plan necessary for you to improve your potential in the industry?

To improve my potential in the industry, I will keep learning new things and try to do them. For instance, I will try to learn more than one programming languages to familiar, so I can enhance my skills for my future career. Therefore, I would not fear the challenges that I face and try my best to do it.

Wong Jia Kai:

1) What is your goal/dream with regard to your course/program?

For the Technology and Information Course, I would like to learn about the foundation of computers and the communication or technical skills through its program. It can strongly help me to better understand the principles of computers and perform greatly in all the tasks.

2) How does this design thinking impact on your goal/dream with regard to your program?

Through this design thinking project, I learn about how a new application can be created from none to all. The harder part is the thinking part, we need to think about the new attractive or interesting functions or ideas. But it's strongly improved my communication and thinking skills.

3) What is the action/improvement/plan necessary for you to improve your potential in the industry?

To improve myself in the industry, I think that I should enhance my communication and teamwork skills to integrate into the team and do the teamwork better. On the other hand, I will supervise myself for continuing learning and keep active in the group for seeking more deeper practical experiences through the internships.

Tien Wei Sheng:**1) What is your goal/dream with regard to your course/program?**

My goal with regard to this course, Technology and Information Systems, is for me to learn more about information technology and coding to help me decide my future career.

2) How does this design thinking impact on your goal/dream with regard to your program?

Design thinking let me know how to create the one project or innovation thing. At the same time, design thinking can improve my skills, my communication skills, and my problem-solving skills. These can lead me to find a suitable career for me.

3) What is the action/improvement/plan necessary for you to improve your potential in the industry?

The plan necessary for me to improve my potential in the industry is to build a basic technical foundation for logic to use the programming languages over the next four years. I will improve my communication skills and leadership skills or team collaboration through participating in activities. Then, start as early as possible to find an internship. Lastly, I will learn about more information technology and emerging technologies to prepare myself to overcome future industry challenges.

Ezz Eddin Bin Marwan:**1) What is your goal/dream with regard to your course/program?**

My goal for this course, Technology Information Systems, is to help me in my pursuit to address complex challenges and problems in the near future for my job as a cybersecurity specialist. This course would be crucial for my foundational knowledge and give me a glimpse to the skills I need to build for my future career.

2) How does this design thinking impact on your goal/dream with regard to your program?

This design thinking has allowed me to approach problems in a new perspective that encourages creative and collaborative thinking. Moving on, it allows me to experience how to work in a group and builds up my teamwork and communication skills. Thus, it aligns perfectly with my goals and helps me prepare for my future career.

3) What is the action/improvement/plan necessary for you to improve your potential in the industry?

To improve my potential in the industry, I'm planning to focus on three aspects: technical skills, practical skills and soft skills. I would deepen my knowledge on programming languages , hacking techniques and more. Other than that, I would seek competitions , workshops and projects to get hands-on experience to improve my practical skills which would help with me being more familiar with the industry.Lastly I Would improve my soft skills such as communication, teamwork and leadership skills to ensure I could work well in teams. By committing to these aspects, I'm confident to be able to become a well-rounded professional that's able to thrive in the industry.

Neoh Sun Hong:

1) What is your goal/dream with regard to your course/program?

I aim to specialise in emerging technologies like Artificial Intelligence(AI), Internet of Things(IoT), Blockchain technology, and more. I expect to gain some valuable insights from our design thinking final projects as well as the course that I enrolled in. It is essential to determine my pathway in the diverse field of computer science.

2) How does this design thinking impact on your goal/dream with regard to your program?

Design thinking projects have influenced me, especially in terms of collaboration and creativity. It supports me in engaging with diverse perspectives, which are essential when working with complex technologies. Moreover, it helps me to identify unique problems that may not be immediately obvious. Furthermore, prototyping and testing allow me to enhance my ideas through experimentation, ensuring that the product meets the needs and expectations of its users. This technique improved my capacity to provide effective solutions for future projects.

3) What is the action/improvement/plan necessary for you to improve your potential in the industry?

To boost my potential in the industry, I will enroll in online courses related to advanced technologies like Artificial Intelligence and Blockchain technology. Additionally, I will seek internships to gain hands-on experience with these technologies. On the other hand, pursuing additional skill certifications are vital for broadening my opportunities in this field. Lastly, I will enhance my programming language proficiency to strive for a better understanding.

Task Distributions

<u>Group Member</u>	<u>Task</u>
Wong Jia Kai	<ul style="list-style-type: none">● Prototype Design● Presentation Slide Design
Neoh Sun Hong	<ul style="list-style-type: none">● Report Writing: (Detailed Description/ Design Thinking Assessment Point)
Tan Jun Quan	<ul style="list-style-type: none">● Prototype Design● Presentation Slide Design● Video editing
Tien Wei Sheng	<ul style="list-style-type: none">● Report Writing: (Introduction / Detailed Steps)
Ezz Eddin Bin Marwan	<ul style="list-style-type: none">● Report Writing: (Design Thinking Evidence)

References

1. GeeksforGeeks. "What is Design Thinking?" *GeeksforGeeks*. Accessed 12 January, 2025.
<https://www.geeksforgeeks.org/what-is-design-thinking/>