



UTM

UNIVERSITI TEKNOLOGI MALAYSIA

SECP1513 TECHNOLOGY AND INFORMATION SYSTEM SECTION 9

DESIGN THINKING PROJECT

**TOPIC : BIG DATA AND ARTIFICIAL INTELLIGENCE
(AI) NEW INNOVATION**

GROUP 4

**PROJECT NAME :
AI-POWERED MOVIE TICKET BOOKING SYSTEM**

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1.0 INTRODUCTION

Artificial intelligence's explosive rise has completely changed how consumers engage with daily services, including entertainment. In order to improve and streamline the movie-going experience, our project presents an AI-powered movie ticket booking system. In contrast to conventional platforms, this method ensures that consumers can swiftly and easily select the best option by automatically comparing ticket prices, showtimes, and availability across multiple theatres. The solution simplifies reservations and offers tailored recommendations by using AI-driven recommendations and real-time data analysis, making choosing films more effective and pleasurable.

1.1 Objectives

The goal of this project is to create an AI-powered movie ticket booking system that evaluates various theatres and films to give customers the best choices in a timely and convenient manner.

1.2 Methodology

In order to create an AI-powered movie ticket booking system, this project used the design thinking methodology. There were five main stages to the methodology:

- **Empathy:** To understand the difficulties in purchasing tickets and evaluating options across various platforms, surveys and interviews with moviegoers were conducted.
- **Define:** Frame the issue as the absence of a single system that enables consumers to effectively compare theatres, films, and ticket prices.
- **Ideate:** Before deciding on an AI-driven system for intelligent comparison and tailored recommendations, a number of options, including web platforms and mobile apps, were brainstormed.
- **Prototype:** A low-fidelity prototype was created with capabilities including showtime filtering, cinema comparison, and customised recommendations.
- **Test:** Users were given access to the prototype to provide input, which helped to improve the interface and increase the accuracy of recommendations.

2.0 DETAIL STEPS

2.1 Empathize

At this stage, we interact with the user through surveys using Google Forms in an attempt to fully understand their frustration. They share their experiences of wasted time spent in cluttered applications, paralyzed by many choices, and their need for a streamlined and guided experience. This survey allowed us to identify expectations, pain points and preferences of users when using the movie booking system , providing suggestions about the improvement for the next define,ideate and prototype.

2.2 Define

We analyze all collected empathy data in the Google Form to synthesize and frame the core problem by summarizing the data and visualizing it into a graph. We have identified the features of our design thinking by analyzing their answers in the survey. This phase fine-tunes our focus by identifying precisely the challenge that we want to solve for our particular user and helps to clearly set an ideation target.

2.3 Ideate

During this stage, brainstorming takes place where all the possible solutions for the problem are explored. Each group member's idea was gathered. We generate a few ideas such as recommendation carousels using AI, intelligent seat selection , adaptive interfaces and more. Thus , there were several solutions that we were able to find to solve the problems.

2.4 Prototype

After deciding the features and ideating, we make the chosen ideas testable by building out the design and prototype. That prototype is based on the ideate stage. Prototype is a rough but functional model intended to quickly and inexpensively communicate the core experience, it's not a finished product.

2.5 Test

At this final stage, we put our prototypes in front of actual users and watch them as they try to use it. We receive feedback and comment on our prototype. This validation process is an essential step in the process of learning and refinement before the actual, expensive building work starts.

3.0 DETAILED DESCRIPTIONS

3.1 Problem

Traditional movie ticket booking systems often present several challenges:

- **Time-consuming process:** Users must navigate multiple pages and forms before completing a booking.
- **Cluttered interfaces:** Overloaded layouts make it difficult to quickly find relevant information.
- **Lack of personalization:** Systems rarely adapt to individual preferences, forcing users to manually search for movies, seats, and showtimes.
- **Decision fatigue:** Choosing from numerous options without guidance can overwhelm users.

These issues reduce user satisfaction and discourage repeat usage.

3.2 Solution

The proposed AI-powered movie ticket booking system addresses these challenges by integrating intelligent features:

- **Personalized Recommendations:** Suggest movies based on user viewing history, ratings, and genre preferences.
- **Smart Seat Selection:** Automatically recommend optimal seats (e.g., best view, preferred row, group seating).
- **Streamlined Booking Flow:** Minimize steps by applying smart defaults (preferred cinema, payment method, seat type).

- **Adaptive Interface:** Simplify navigation by showing only the most relevant options for each user.
- **Continuous Learning:** Improve recommendations over time through machine learning models.

This solution enhances efficiency, reduces cognitive load, and creates a more enjoyable booking experience

4.0 DESIGN THINKING ASSESSMENT POINTS

The assessments will be critical in determining whether the user-centric design concepts developed in the AI-Powered Movie Ticket Booking System specifically, the AI-driven capabilities (AI recommendations and Smart Seat Selection) are meeting user expectations. The assessments can take place at the following stages:

4.1 During the transition between design thinking phases

- An assessment was completed when transitioning from the Empathize phase to the Define phase in order to verify that the data collected from Google Forms clearly defined the primary user frustration (i.e., wasted time using cluttered ticketing applications).
- Another assessment took place between the Ideate and Prototype phases to validate the feasibility of the selected ideas (i.e., AI chatbots and comparison tools) prior to developing the fully functional model.

4.2 During the end of the project demonstration

- The last assessment takes place after the CineCompare prototype has been demonstrated to real users; it assesses the success of integrating promotions, the accuracy of the AI assistant, and the overall efficiency of the simplified booking process.
- Comments and feedback provided at this time constitute the ultimate validation of whether the AI system has fulfilled its intent of streamlining the movie-going experience.

5.0 DESIGN THINKING EVIDENCE

5.1 Empathy

We conducted a survey among frequent cinema-goers to understand their challenges and expectations when booking movie tickets. Below are the five key questions we asked:

A screenshot of a video conferencing platform showing a survey being presented by Aiman Fikry. The survey consists of three questions:

- Which platform do you usually use to book movie tickets? ***
Three radio button options:
 - Cinema counter
 - Cinema official app
 - Third-party app (e.g., GSC, TGV, etc.)
- How often do you book movie tickets in a month? ***
Three radio button options:
 - 1–2 times
 - 3–4 times
 - More than 4 times
- What problems do you often face when booking tickets? ***
Five checkbox options:
 - Long queues at cinema counters
 - Difficulty finding preferred seats
 - Confusing promotions across platforms
 - Payment issues
 - Other: _____

The video feed shows five participants: NUR AQMAL IMANI BIN..., Aiman Fikry, HazMuda, HAIDATUL AI..., and ngoi jin... The interface includes standard video conference controls like mute, camera, and share screen.

Which platform do you usually use to book movie tickets? *

- Cinema counter
- Cinema official app
- Third-party app (e.g., GSC, TGV, etc.)

How often do you book movie tickets in a month? *

- 1–2 times
- 3–4 times
- More than 4 times

What problems do you often face when booking tickets? *

- Long queues at cinema counters
- Difficulty finding preferred seats
- Confusing promotions across platforms
- Payment issues
- Other:

Do you think AI features (chatbot, smart seat suggestion, personalized movie recommendation) would improve your booking experience?

- Yes
- No

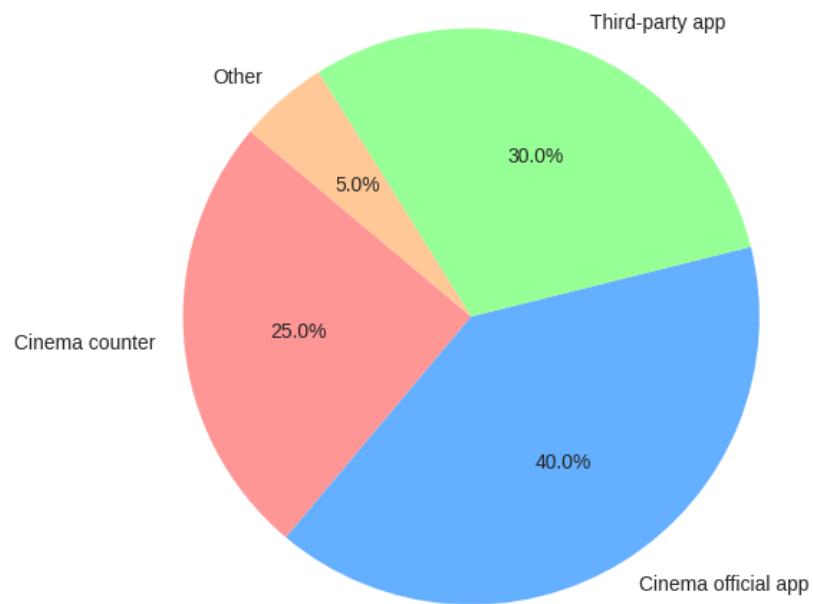
Please provide your suggestion for improving the movie booking system. (Open-ended response) *

Long answer text
.....

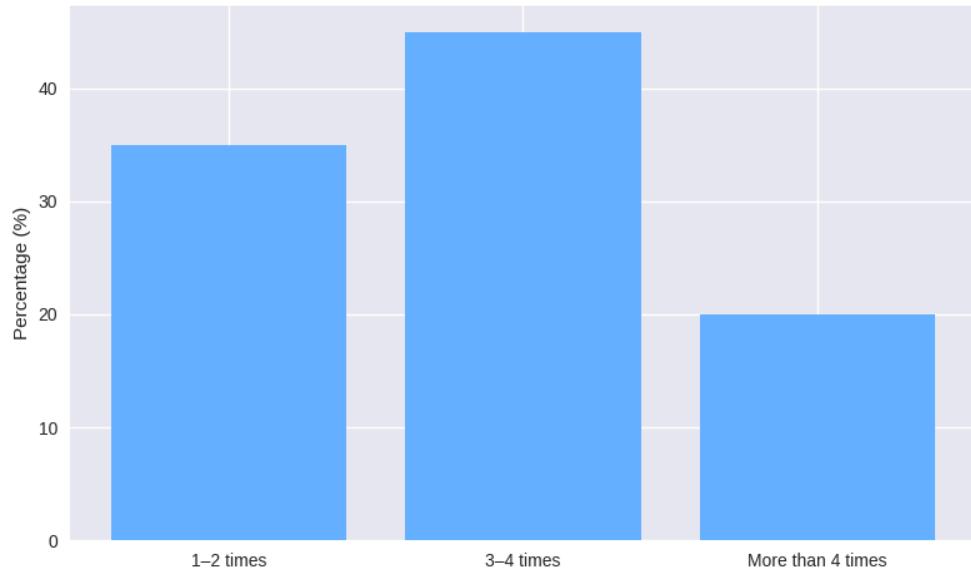
5.2 Define

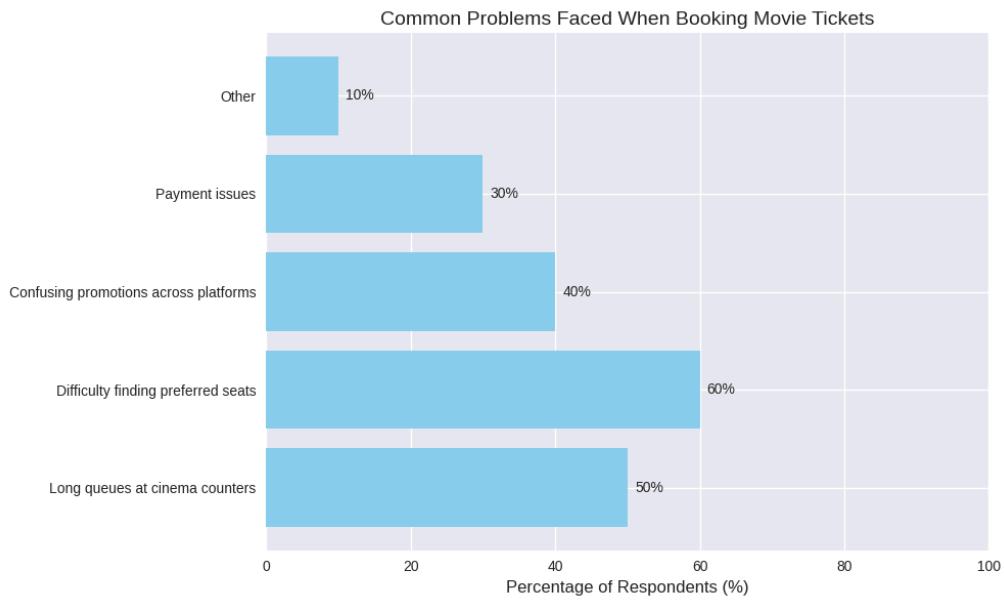
Based on the survey responses, we summarized the data and visualized it into graphs to better understand user needs.

Preferred Booking Platform

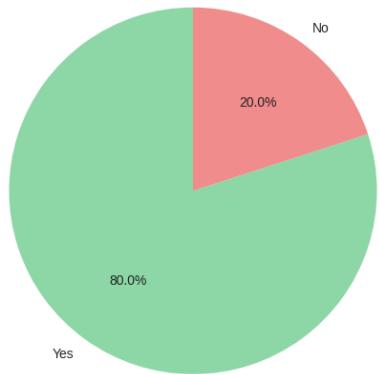


Booking Frequency Per Month





Do you think AI features (chatbot, smart seat suggestion, personalized movie recommendation) would improve your booking experience?



5.3 Ideate

During the brainstorming stage, our team discussed multiple innovative features to improve the movie booking experience. The following solutions were identified as the most impactful and user-friendly:

1. AI chatbot assistant

The AI chatbot assistant can locate the nearest cinema and compare ticket prices across different chains. By offering a conversational interface, the system makes booking faster

and easier, ensuring that users can quickly find the most convenient and cost-effective option without navigating multiple apps or websites.

2. Integration of promotions

The integration of promotions feature collects and displays offers from different cinema chains in one unified dashboard, helping users save money and maximize loyalty points while simplifying decision-making by presenting all available deals in a single, easy-to-navigate interface.

3. Personalized movie recommendations

The personalized movie recommendation feature employs machine learning to analyze each user's past viewing history, then suggests movies tailored to their individual tastes and preferences, ultimately enhancing engagement by making the booking app feel more personal and uniquely suited to every user.

4. All in one platform

The all-in-one platform integrates multiple cinema chains like GSC, TGV, and MBO into a single system, allowing users to compare ticket prices, showtimes, and seat availability instantly. By centralizing information and simplifying booking in one place, it saves time, reduces confusion, and ensures a smoother, more convenient movie-going experience.

5.4 Prototype

After finalising our solution, we relied on the feedback obtained to confirm that the solution addressed customer requirements.

Left Column Screenshots:

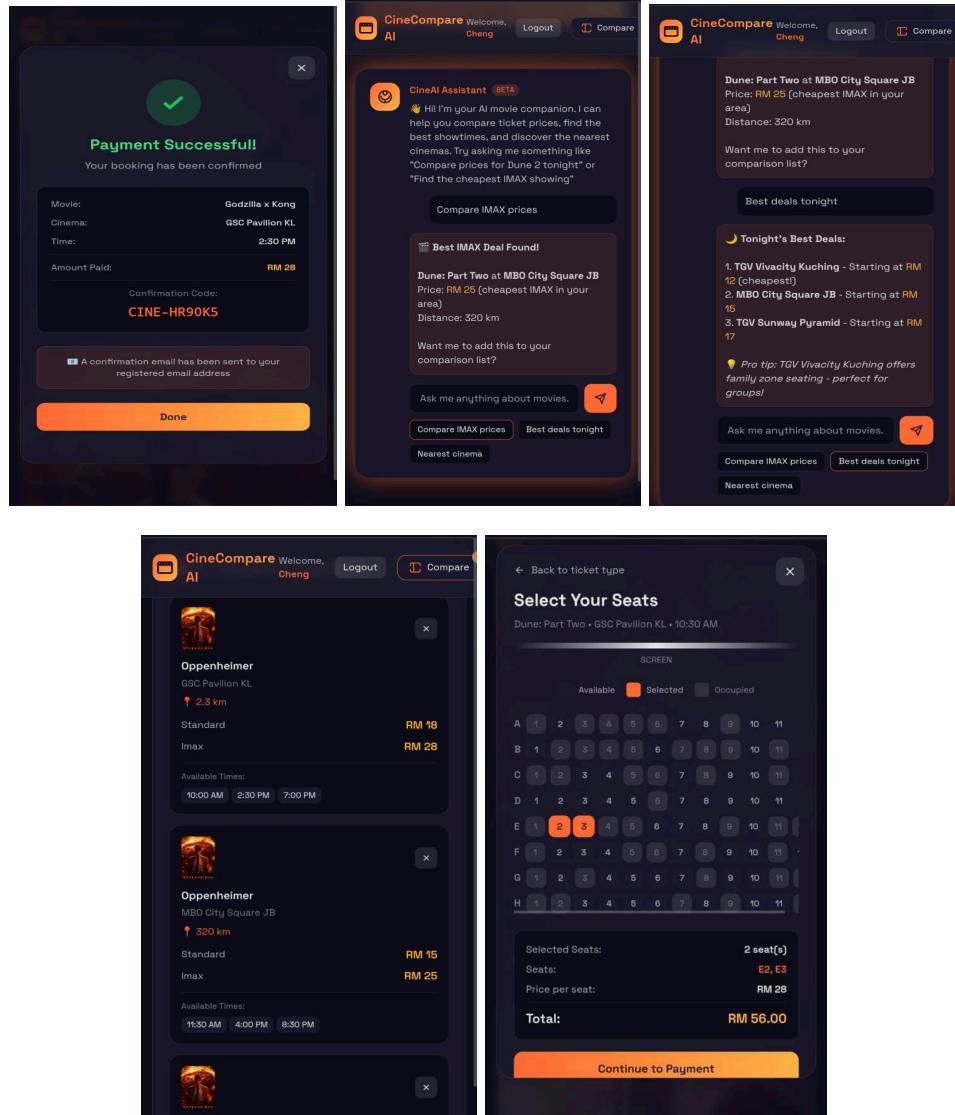
- Home Screen:** Displays the CineCompare logo, user name "Cheng", and navigation buttons for "Logout" and "Compare". Below is a section titled "Find the Perfect Seat at the Best Price" with a sub-section "AI-Powered Comparison". It includes a search bar, location dropdown, and a "Search" button.
- Movie Search:** Shows a search bar with placeholder "Search movies...", a dropdown for "All Locations", and a large orange "Search" button.
- Cinema Selection:** Shows a card for "Godzilla x Kong" with a thumbnail, movie details (115 min, Action, 7.2 rating), and a section for "Select Cinema & Showtime". It lists "GSC Pavilion KL" and "GSC Gurney Plaza" with their respective locations and showtimes.

Right Column Screenshots:

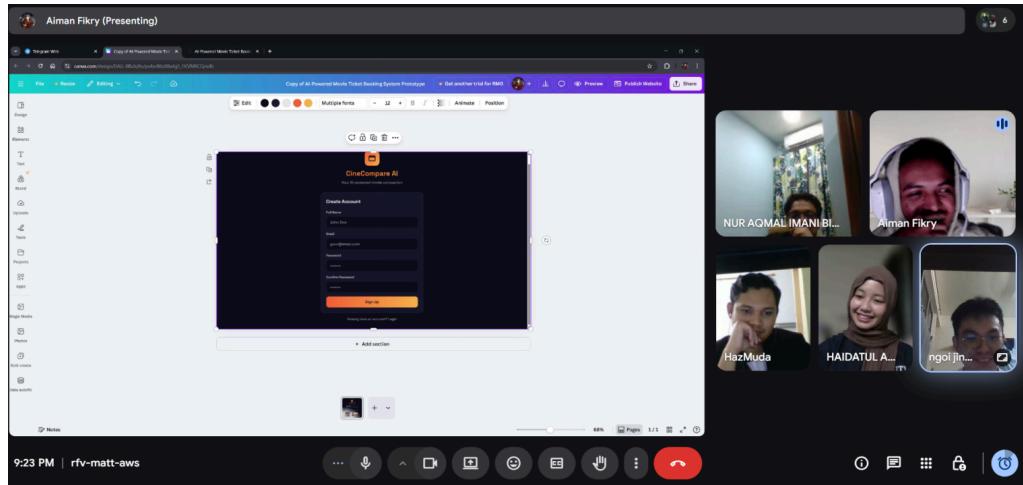
- AI Assistant:** A card titled "CineAI Assistant BETA" featuring a small AI icon and a message: "Hi! I'm your AI movie companion. I can help you compare ticket prices, find the best showtimes, and discover the nearest cinemas. Try asking me something like 'Compare prices for Dune 2 tonight' or 'Find the cheapest IMAX showing'".
- Movie Poster:** A large poster for "Dune: Part Two" with the title "DUNE PART TWO" and a rating of ★ 8.9.
- Partner Cinemas:** A list of nearby cinemas:
 - GSC Pavilion KL:** Pavillion Shopping Centre, Kuala Lumpur, 2.3 km away. Features: IMAX, Dolby Atmos, Recliner Seats.
 - TGV Sunway Pyramid:** Sunway Pyramid, Petaling Jaya, 8.5 km away. Features: 4DX, VIP Lounge.
 - MBO City Square JB:** City Square, Johor Bahru, 320 km away. Features: Laser Projection.
 - GSC Gurney Plaza:** Gurney Plaza, Penang, 350 km away. Features: Dolby Atmos, Premium Seating.
- Booking Summary:** A summary for "Godzilla x Kong" at "GSC Pavilion KL" at 2:30 PM. It shows:

Movie:	Godzilla x Kong
Cinema:	GSC Pavilion KL
Time:	2:30 PM
Ticket Type:	Imax
Subtotal:	RM 28
Total:	RM 28
- Payment Method:** Options for payment include "FPX Online Banking", "Credit/Debit Card" (VISA, Mastercard, Amex), and "Touch 'n Go eWallet".

Prototype Interfaces



Prototype Interfaces



Prototype developed

5.5 Test

After completing the prototype, we invited several users to try it out. The majority provided positive feedback on its functionality and also shared valuable suggestions for further improvement.





User testing Prototype

6.0 REFLECTIONS

Nur Aqmal Imani:

A. What is your goal/dream with regard to your course/program?

My dream is to work as a software developer and create clever, approachable programs that address practical issues. In order to enhance daily user experiences, I want to work on systems that incorporate cutting-edge technology like artificial intelligence. In the long run, I want to help create cutting-edge digital items that are effective, significant, and extensively utilized in the sector.

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

My understanding of the significance of user-centered design and problem-solving beyond coding has improved thanks to design thinking. It altered my viewpoint by highlighting the necessity of determining actual user issues before creating technical fixes. This method guarantees that the systems I develop are not only useful but also relevant and in line with user expectations. This project taught me how testing, ideation, and empathy all directly improve system design. These abilities help me achieve my objective by equipping me to create solutions that strike a balance between usability and technical viability, which is crucial in the software and technology sector.

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

To maximize my potential in the field, I intend to advance my technical proficiency in AI, UX design, and collaboration. By taking part in more group projects and real-world case studies, I also hope to improve my communication and problem-solving abilities. In order to remain current and flexible in a rapidly evolving technological world, I will also keep learning new tools and technologies.

Haidatul Aisah Yap:**A. What is your goal/dream with regard to your course/program?**

My dream within the Technology and Information Systems course is to become a systems architect , capable of designing and implementing integrated technology infrastructures that make organizations more secure, efficient, and adaptable to change.

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

Design thinking impacts this goal by ensuring the systems I help build are human-centric. It teaches me to first understand the workflows and pain points of the end-users and stakeholders, which leads to creating technical solutions that are not just robust on the backend but are also intuitive and genuinely adopted by people.

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

The key action for me is to bridge theory with hands-on practice. I plan to pursue certifications in areas like cloud computing and cybersecurity, actively work on collaborative coding and seek an internship where I can apply design thinking to real business IT challenges.

Muhammad Aiman Fikri:**A. What is your goal/dream with regard to your course/program?**

My goal in the Technology and Information Systems course is to move into the Graphics and Multimedia industry, where I can focus on developing innovative digital solutions and interactive applications. I want to work as a developer who combines technical know-how with creative imagination, especially in fields like user experience design, animation, and game development.

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

By allowing me to approach problems from a user-centred viewpoint, design thinking helps me realise this objective. It motivates me to understand people, articulate their wants precisely, and come up with original concepts that strike a balance between practicality and originality. This kind of thinking guarantees that the multimedia systems I create are useful, intuitive, and meaningful for their users in addition to being aesthetically pleasing.

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

I intend to improve my proficiency in design tools and programming frameworks related to multimedia creation, like Unity, Blender, and sophisticated C++ graphics libraries, in order to maximize my potential. In addition, I'll look for chances to work with others on creative projects, develop a solid portfolio, and apply design thinking to practical multimedia solutions through internships. I want to establish myself as a flexible professional in the field by fusing technical proficiency with innovative creativity.

Ngoi Jin Cheng:

A. What is your goal/dream with regard to your course/program?

My goal in pursuing the Technology and Information Systems course is to build a strong foundation in computer science and artificial intelligence. I aspire to become a professional who can design intelligent systems that solve real-world problems, particularly in areas that improve everyday user experiences. In the long run, I aim to contribute to innovative projects that integrate AI into practical applications, making technology more accessible and impactful.

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

This design thinking project has shown me the importance of approaching problems from a user-centered perspective. It taught me that successful solutions are not only about technical skills but also about empathy, creativity, and collaboration. By applying the design thinking stages — empathize, define, ideate, prototype, and test — I learned how to transform user frustrations into opportunities for innovation. This experience directly supports my dream by strengthening my ability to design AI systems that are both technically sound and aligned with user needs.

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

To improve my potential in the industry, I plan to continuously develop technical skills in programming, AI, and data analysis while gaining hands-on experience through internships, projects, and competitions to apply theory in real-world scenarios. At the same time, I aim to strengthen soft skills such as communication, teamwork, and leadership, which are essential for collaborative projects, and stay updated with emerging technologies by enrolling in online courses and pursuing certifications. By combining technical expertise with user-centered design thinking, I will be better prepared to thrive in the fast-evolving technology industry..

Muhammad Hazim:**A. What is your goal/dream with regard to your course/program?**

I have the ambition to be at my best as an information systems specialist, working with data visualization and digital media. My goal is to develop systems that do not only collect and process data; however, they also display the data in a visually appealing manner to stakeholders to aid in understanding. My overall goal is to fill the gap between the back-end processing of systems and how those systems are visually represented to users.

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

This project has highlighted that data is only useful when it is framed around the human experience. By working on the Design Thinking Evidence , I realized that documenting the user's struggle during the Empathy phase is just as important as the final product . It has taught me to use multimedia tools, like video editing, not just for show but as a powerful medium to communicate evidence-based solutions to real-world problems.

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

To remain competitive, I plan to deepen my expertise in technical documentation and advanced video production software. I also intend to learn how to use AI-driven analytics to better interpret survey data, like the ones we collected via Google Forms . By combining strong analytical skills with high-quality multimedia production, I aim to become a versatile professional who can effectively "tell the story" of any technological innovation.

7.0 TASK DISTRIBUTION

Group Member	Task(s)
Muhammad Aiman Fikri Bin Zulkarnain	Prototype Design And Presentation Slide Design
Haidatul Aisah Yap Binti Abdullah	Report Writing: Detailed Description And Design Thinking Assessment Points
Ngoi Jin Cheng	Prototype Design And Video Editing
Nur Aqmal Imani Bin Hassnor	Report Writing: Introduction And Detailed Steps
Muhammad Hazim Bin Misamudin Muda	Report Writing: Design Thinking Evidence And Video Editing

8.0 REFERENCES

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