Development of 3d VISUAL FTSM BUILDING USING 3DS MAX AND UNITY

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ABSTRACT

This project addresses the prevalent issue within the FTSM college community where new students often struggle to locate their classrooms and offices efficiently, resulting in absences or tardiness that hinder academic progress. To alleviate this problem, the project aims to create a comprehensive 3D model of the FTSM college using Autodesk 3ds Max and Unity software.The 3D model will serve as an invaluable resource for new and existing students, as well as faculty and staff members, enabling users to virtually navigate the campus, locate specific classrooms and offices, and identify the most efficient routes. This solution not only saves students time but also enhances their overall college experience.The project employs a development strategy that involves detailed 3D modeling and interactive features, leveraging C# programming within the Unity environment. The outcome is a robust and user-friendly virtual campus guide that familiarizes students with the FTSM layout, reducing the stress and uncertainty often associated with transitioning to a new educational institution.In summary, the "Development of 3D Visual FTSM Building using 3ds Max and Unity" project addresses the challenge of locating classrooms and offices within the college by providing a 3D model that empowers students, faculty, and staff to navigate the campus effectively, thereby enhancing their overall college experience.

INTRODUCTION

Many new students, especially international students, face challenges in quickly and accurately finding their classrooms at FTSM college. This common issue often results in students being absent or late, impacting their overall college experience. To address this, the "Development of 3D Visual FTSM Building using 3ds Max and Unity" project aims to create a comprehensive solution using Autodesk 3ds Max and Unity software.

In addition to developing a 3D model of the FTSM college, this project will incorporate a user-friendly registration login interface.Students will have the ability to log in to the system and access the virtual FTSM environment. This interface provides new students with the opportunity to explore the 3D model in advance, helping them locate classrooms, offices, and other facilities efficiently. Moreover, it enables them to plan the shortest routes to save time and find the precise locations of various rooms within the college.

For international students or those unfamiliar with the college, the 3D modeling component of the project serves as a valuable tool for understanding the overall campus environment. By seamlessly integrating registration and login capabilities, the project aims to enhance the accessibility and usability of the 3D model, contributing to an improved onboarding experience for new students at FTSM

RESEARCH METHODOLOGY

The development of the 3D Visual FTSM Building project was structured following an Agile development model. This approach was chosen due to its flexibility and ability to adapt to changing requirements, allowing for incremental delivery of functional components and timely user feedback.

Data Collection and Preparation:

- Photographs and Maps: High-resolution photographs and maps of the FTSM campus were collected to ensure accurate modeling.
- Concept and Reference Images: These were used to guide the design, ensuring scale and proportion accuracy.

Figure 1.1 reference image 4 of FTSM buildings .

3D Modeling with Autodesk 3ds Max:

- Object Modeling: Detailed creation of campus components, shapes, and structures.
- Unit Setup: Defined appropriate units (meters or feet) to align with real-world dimensions.

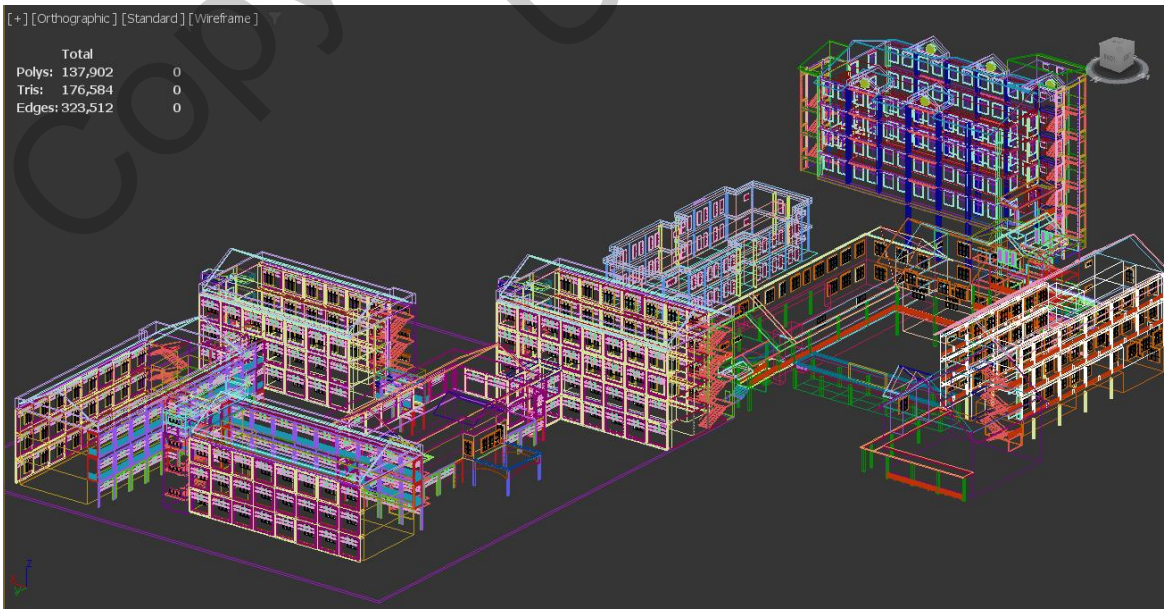

Figure 1.2 3D Modeling of FTSM Wireframe .

Figure 1.3 3D Modeling of FTSM .

Integration with Unity:

- Importing Models: The 3D models created in 3ds Max were imported into Unity for further refinement.
- User Interface Design: Intuitive interfaces were developed for user registration and login, enabling users to explore the virtual campus.
- Interactive Features: Implemented features such as character control, mini-maps, and voice explanations to enhance user interaction.

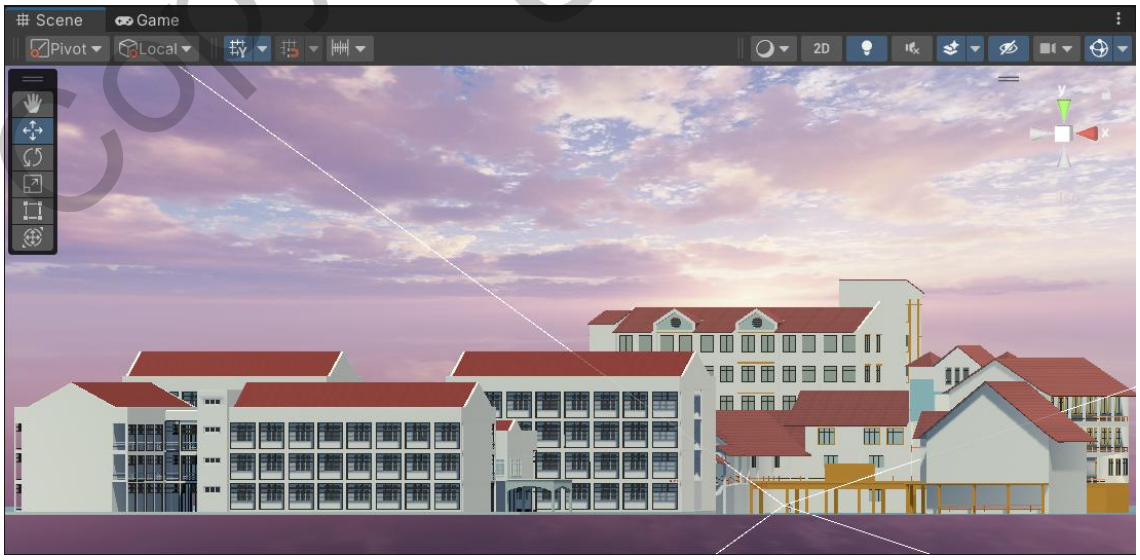

Figure 1.4 Visual FTSM in UNITY.

Programming and Scripting:

- C# Scripts: Developed scripts for user interactions, including navigation, registration, and login functionalities.
- Performance Optimization: Ensured smooth performance across various devices and platforms.

Testing Phases:

- Manual Testing: Conducted to verify functionality, including registration, login, character control, and interactive features.
- Automated Testing: Used to assess performance under different load conditions.
- User Acceptance Testing: Gathered feedback from UKM student volunteers to ensure usability and functionality.

RESULTS AND DISCUSSION

This interface is the login page, which provides login and account registration functions.If you already have an account you can fill in your email address and password and click the login button to sign in.

Figure 1.5 3D Modeling of FTSM login page .

If you don't have an account yet, you will first need to click the Register button to register an account.

Figure 1.6 3D Modeling of FTSM register function .

Once you've successfully logged in, you'll be able to explore the virtual FTSM.Users can utilize input devices such as mouse and keyboard for seamless navigation and exploration, and interact with 3D models by controlling virtual character movement and rotation.

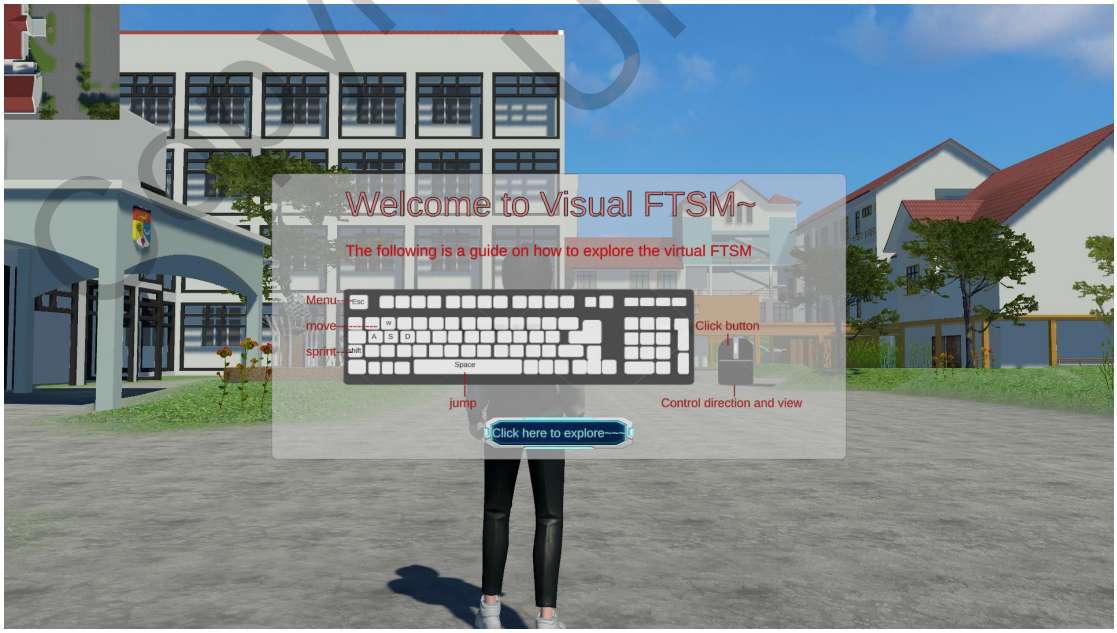

Figure 1.7 3D modeling for FTSM introduction function .

Figure 1.8 3D modeling for FTSM menu function .

Figure 1.9 3D modeling for FTSM exploration function .

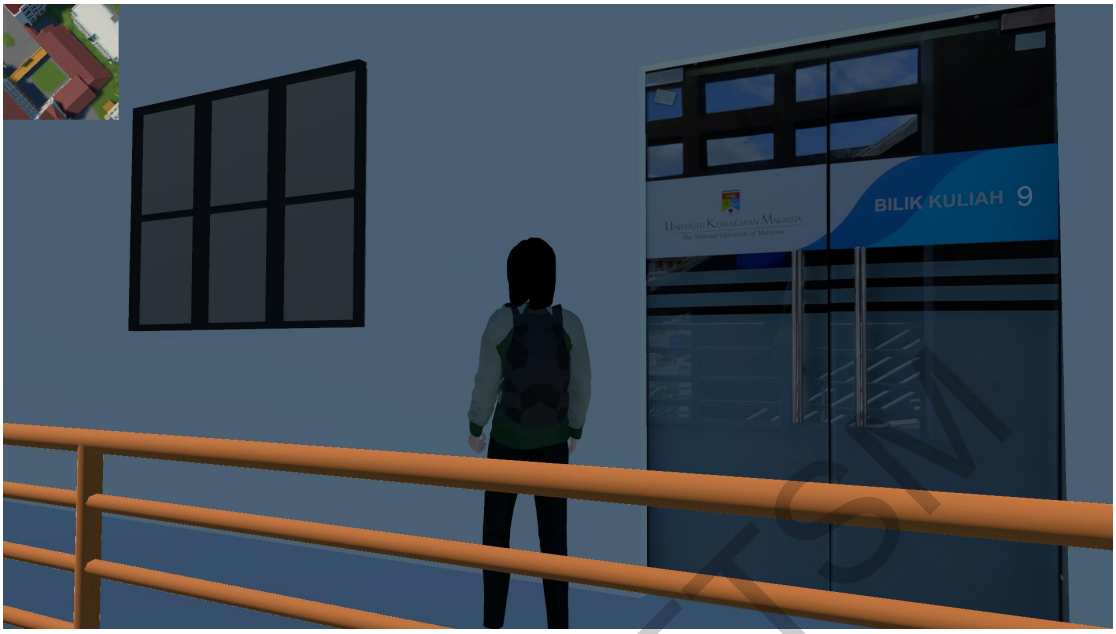

Figure 1.10 3D modeling for FTSM exploration function .

The user acceptance test received positive feedback from UKM student volunteers. All test cases passed successfully, verifying the reliability, usability and user satisfaction of the system. The purpose of user acceptance testing is to collect user evaluation and feedback. Valuable feedback enables developers to truly understand user needs and experience, so as to develop a program that makes users more satisfied.

The following is a partial display of the results of the questionnaire about user acceptance testing.There are 11 respondents in total.

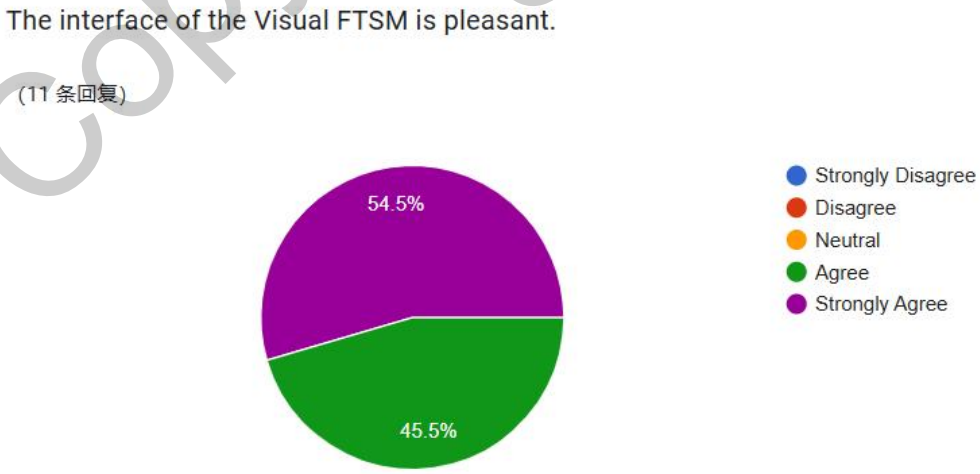

Figure 1.11 Result of the interface of the Visual FTSM pleasant .

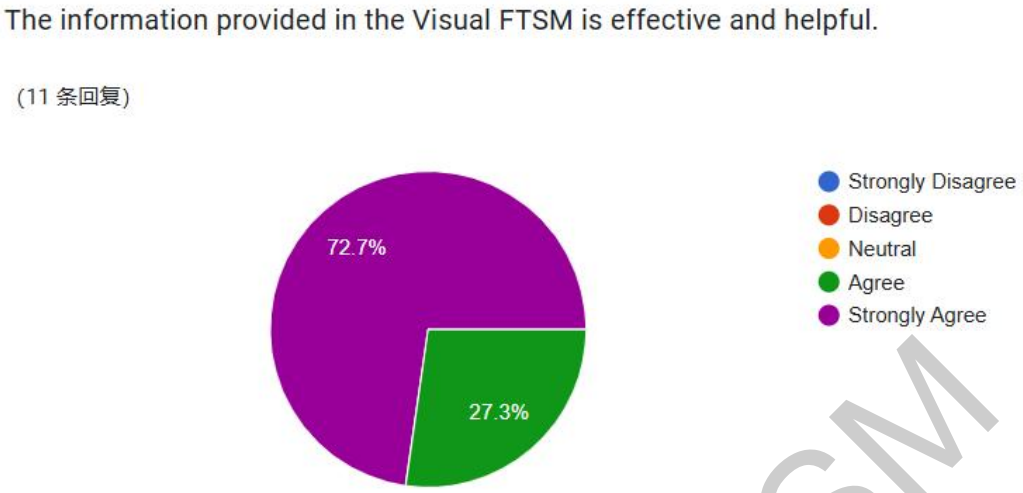

Figure 1.12 Result of questionnaire about user acceptance testing .

CONCLUSION

The "Development of 3D Visual FTSM Building using 3ds Max and Unity" project successfully addressed the challenge of helping new and international students navigate the FTSM campus through the development of a comprehensive 3D model. This virtual model was created using 3ds Max for detailed 3D modeling and Unity for integration, ensuring an interactive and user-friendly interface. The project involved meticulous data collection, user interface design, and the implementation of interactive features such as user registration, login, and virtual character navigation.

The project's strengths lie in its detailed and realistic 3D representation of the FTSM campus, which significantly enhances spatial understanding and navigation for new students. The integration of interactive elements such as mini-maps and voice explanations further improves the user experience, making it easier for students to familiarize themselves with the campus layout before their arrival.

Despite its strengths, the project faced limitations, including challenges in ensuring data confidentiality and compatibility across various devices. Additionally, accurately modeling the complex architectural details of the campus required substantial effort, which may have limited the scope and precision of the model in some areas.

Future improvements could focus on enhancing the stability and compatibility of the 3D model across different platforms and expanding the model to include more detailed information about campus facilities. Incorporating additional interactive features such as real-time navigation assistance could further improve the utility and user experience of the virtual campus.

Overall, the "Development of 3D Visual FTSM Building using 3ds Max and Unity" project has successfully developed a functional and user-friendly 3D model of the FTSM campus, addressing the navigation challenges faced by new students and providing an accessible and interactive virtual environment. This project represents a significant step forward in enhancing the onboarding experience at FTSM .

APPRECIATION

I would like to express my deepest gratitude to Dr. Siti Zahidah Abdullah, my project supervisor, for her invaluable guidance and support throughout this project. Her insightful advice and encouragement were instrumental in helping me navigate the challenges of this project and find effective solutions.

I am also grateful to all the UKM student volunteers who participated in the user acceptance testing phase. Their feedback was crucial in validating the reliability, usability, and overall user satisfaction of the system. Their willingness to engage with the project and provide constructive feedback was greatly appreciated and has contributed significantly to the project's success.

Additionally, I extend my thanks to my family and friends for their unwavering support and encouragement. Their belief in my abilities provided the motivation needed to see this project through to completion.

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