SRI LANKA INSTITUTE OF INFORMATION TECHNOLOGY

2024

Modern Topics in IT
IT4020

Assignment 02

GROUP ID - MTIT-24-121

Mixed Reality Assignment
AR Application (Mobile)

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1. Introduction

In response to our university module's assignment, our team embarked on crafting a marker-based Augmented Reality (AR) application, aiming to provide users with an immersive journey into the world of dinosaurs. Our goal was to utilize cutting-edge technology to enrich both entertainment and educational experiences.

2. Tools Utilized

We strategically employed the following tools for the successful implementation of our AR application:

- **Unity:** Serving as the cornerstone of our development, Unity provided a robust platform for game development, offering real-time rendering, physics simulation, and cross-platform deployment capabilities.

- **Vuforia:** To integrate marker recognition and tracking functionalities, we utilized Vuforia, an augmented reality software development kit (SDK), known for its robust APIs and user-friendly interface.

3. Procedures

Our development process adhered to meticulously planned procedures, ensuring the successful creation of the AR application:

- **Research:** Thorough research was conducted to select the most suitable AR development tools and methodologies, leading us to choose Unity and Vuforia for their compatibility and robust features.

- **Planning:** With clear project objectives in mind, we engaged in comprehensive planning to outline the scope and requirements, defining key features and interaction mechanics.

- **Asset Acquisition:** We sourced high-quality dinosaur models and marker images, ensuring authenticity and visual fidelity in our AR content.

- **Development:** Leveraging Unity, we imported assets and programmed dinosaur movements and behaviors, while integrating Vuforia's marker recognition functionality.

- **Testing:** Rigorous testing was conducted to assess stability and performance across various devices and environments, iterating to refine the user experience.

- **Optimization:** Final optimization efforts focused on rendering efficiency, latency reduction, and marker detection algorithm fine-tuning for consistent performance.

4. Individual Contributions

The AR application comprises several distinct components:

Marker Recognition - At the core of the application is Vuforia's marker recognition technology, which enables the detection and tracking of specific images (markers) in the user's environment. These markers serve as anchor points for overlaying AR content, allowing dinosaurs to interact seamlessly with the physical world.

Dinosaur Models - The application features a diverse selection of dinosaur models, each meticulously crafted and animated to depict its real-world counterpart accurately. From the fearsome Tyrannosaurus Rex to the gentle Triceratops, these dinosaur models captivate users with their lifelike appearances and behaviors, enhancing the overall immersion and realism of the AR experience.

User Interface (UI) - To provide users with intuitive controls and feedback, the application incorporates a user interface consisting of interactive elements and instructional prompts. The UI guides users through the AR experience, offering clear instructions on marker placement and interaction with the dinosaurs. Additionally, the UI provides feedback on user actions, enhancing usability and engagement.

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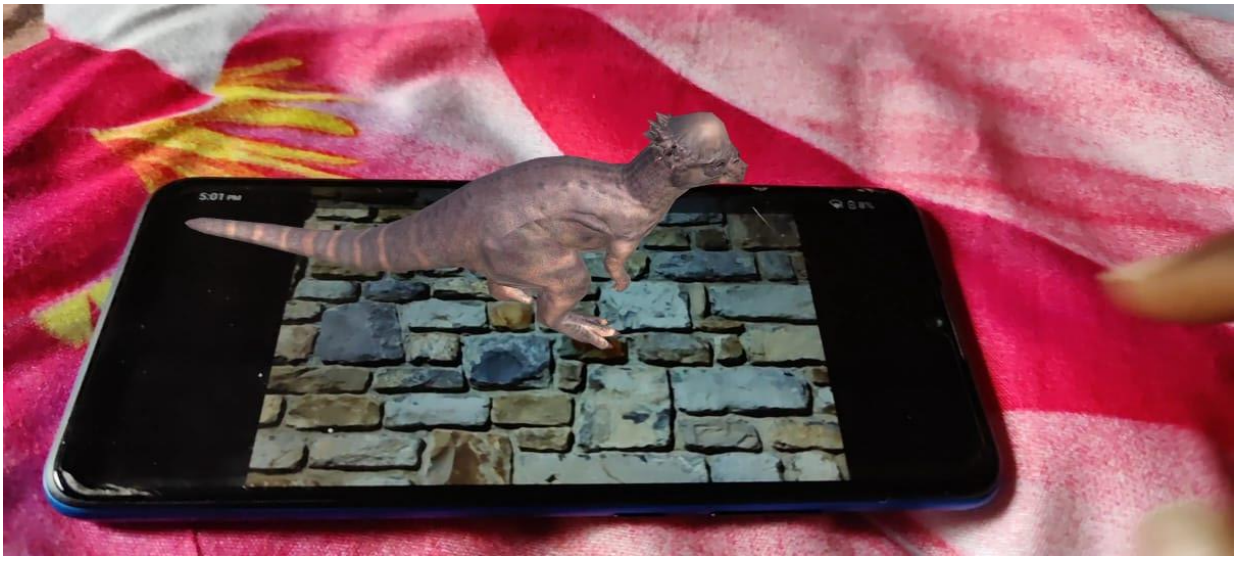
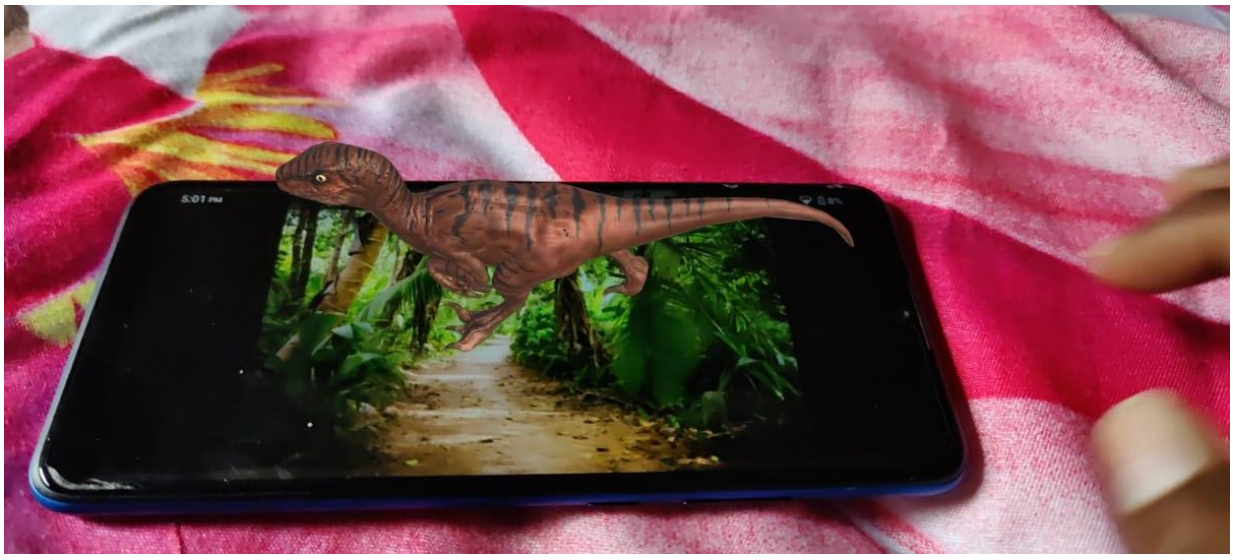
Name	IT Number	Contribution
Venuganth A	IT21102646	• Marker Recognition • 3 dinosaur models
Lakshana K	IT21010194	• User Interface (UI) • 3 dinosaur models
Sujeevan K	IT19178882	• Help with build APK File and Animation
Rushanth B	IT21150098	• Help with build APK File and Animation

5. Conclusion

In conclusion, our team has successfully developed a marker-based AR application, immersing users in the world of dinosaurs through Unity and Vuforia. This project not only showcases our technical proficiency but also highlights our collaborative efforts, setting the stage for future innovations in augmented reality.

6. Demo Screenshots





Demo Video and APK,

[AR Application (Mobile)]