VR EXPERIENCE THE SOLAR SYSTEM

Micro Project Report

Submitted by

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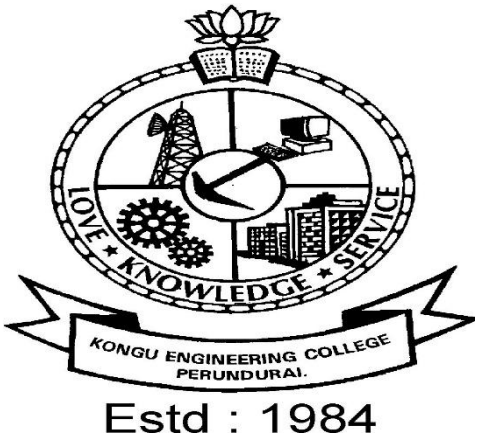

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BONAFIDE CERTIFICATE

Certified that this micro project documentation of **"VR EXPERIENCE THE SOLAR SYSTEM"** is the bonafide work of **"VASANTHAKUMAR K (22CDR111), MATHANKUMAR S (22CDL124), VIJAYA KUMAR K (22CDL127)"** who carried out the project under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of my other thesis or dissertation on the basis of which a degree or awarded was conferred on an earlier occasion on this or any other candidate.

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VR EXPERIENCE THE SOLAR SYSTEM

AIM

The aim of this project is to create an immersive Virtual Reality (VR) experience that allows users to explore and interact with a virtual representation of the Solar System. The project highlights the educational potential of VR technology in understanding celestial bodies and their dynamics.

ABSTRACT

This project provides a fully interactive VR experience of the Solar System. Users can navigate through the virtual space to explore planets, moons, and other celestial objects. The experience includes realistic visuals, audio narration, and interactivity, making it an effective tool for learning and engagement. By leveraging VR technology, the project demonstrates its potential in creating educational simulations with high levels of immersion.

SCOPE AND OBJECTIVES

SCOPE:

This VR project aims to serve as an educational tool, enhancing the learning of astronomy through immersive exploration. It demonstrates how VR can be utilized for science education, providing learners with a hands-on understanding of the Solar System.

OBJECTIVES:

1. Develop an interactive VR environment that visualizes the Solar System with realistic scaling and motion.
2. Implement planet-specific interactions, such as zooming in for detailed views and learning facts.
3. Integrate audio narration to provide users with scientific and historical context.

HARDWARE & SOFTWARE REQUIREMENTS

- Development Platform: Unity with XR Interaction Toolkit (for cross-platform VR development)
- 3D Modelling Tools: Blender or Sketchfab (for creating celestial objects and space environments)

Hardware:

- VR Headset (e.g., Oculus Quest 2, HTC Vive, or any other XR-enabled device)
  High-performance PC for testing and rendering

EXISTING SYSTEM

Current VR applications in astronomy education are either basic planetariums or limited interactive simulations. These systems often lack interactivity and fail to provide a sense of immersion or dynamic exploration.

DRAWBACKS

1.Limited interaction and user engagement.

2.Lack of scalable, detailed models for the Solar System.

PROPOSED SYSTEM

The proposed VR experience elevates user engagement by creating a fully interactive simulation of the Solar System. Users can "fly" between celestial bodies, learn detailed information, and witness planetary motions.

Advantages:

1. Immersive Learning: Real-time exploration of planets, moons, and other objects with realistic scaling.
2. Interactive Features: Clickable objects for detailed information and animations.
3. Educational Utility: Acts as a comprehensive tool for schools and science enthusiasts.

PROJECT DESIGN

The project design involves creating a VR simulation of the Solar System using Unity. 3D models of planets and celestial objects are textured and scaled accurately. Users interact through VR controllers or hand gestures, navigating freely in a 3D space.

IMPLEMENTATION OF THE PROJECT

1. VR Setup:
Integrate Unity with XR Interaction Toolkit to develop VR-compatible features for multiple platforms.

2. Solar System Design
Design 3D models of celestial objects (planets, moons, Sun, etc.) using Blender.
Ensure realistic scaling and distances for an authentic experience.

3. User Interaction:
Implement movement controls (e.g., teleportation, flying) for navigating the Solar System.
Add interaction triggers to display information about planets and events (e.g., meteor showers).

4.Visual and Audio Effects:
Include realistic textures, animations for planetary orbits, and dynamic lighting.
Integrate audio narration and background music for an engaging experience.

CONCLUSION

The VR Solar System project demonstrates the potential of Virtual Reality as a tool for immersive education. By combining detailed models, interactive elements, and engaging narration, it serves as a dynamic platform for exploring astronomy concepts.

FUTUREWORK

1.Add multiplayer functionality for collaborative exploration.

2.Expand the simulation to include galaxy-wide exploration.

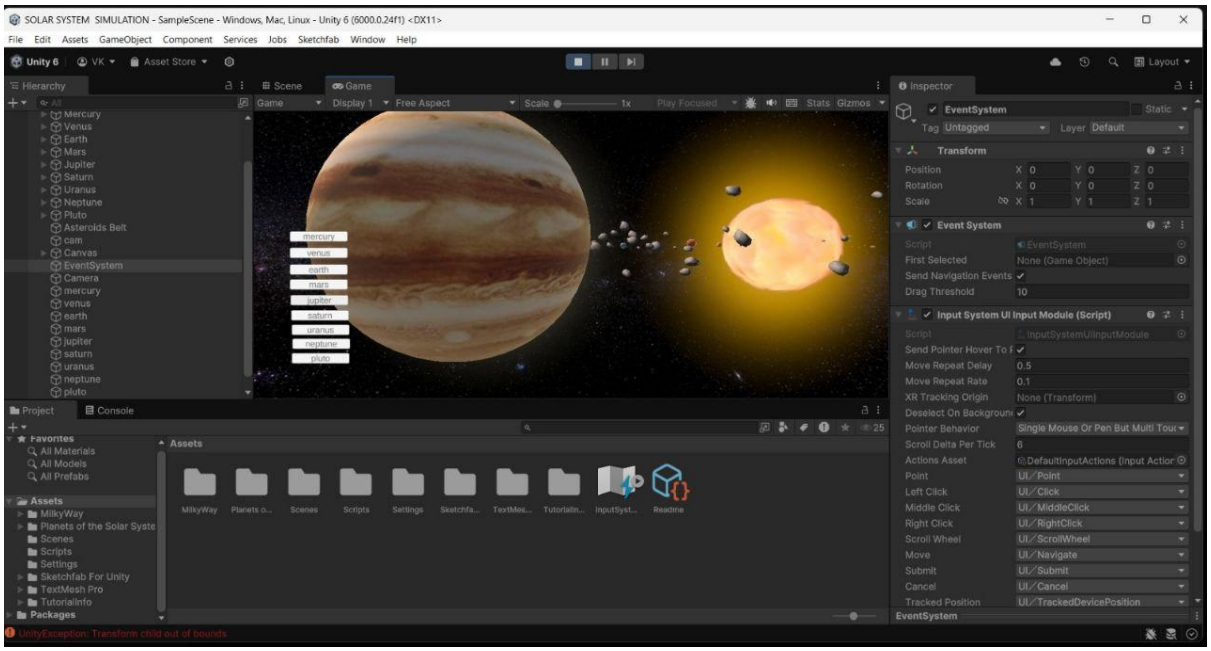
3.Integrate AR features for mixed-reality educational tools.

SCRIPTS

3D Model:

```
using UnityEngine;
public class PlanetInteraction : MonoBehaviour
{
   public string planetName;
   public string planetInfo;
   private void OnTriggerEnter(Collider other)
   {
      if (other.CompareTag("Player"))
      {
         DisplayInfo();
      }
   }
   private void DisplayInfo()
   {
      Debug.Log($"Planet: {planetName}\nInfo: {planetInfo}");
      // Code to display info in VR UI
   }
}
```

SCREENSHOT OF THE PROJECT



GITHUB LINK AND QR CODE

Github Link

https://github.com/vasanthk47/VR_EXPERIENCE_THE_SOLAR_SYSTEM

QR Code: