

Vision

Our vision is to empower aspiring nursing students by offering immersive, hands-on experiences in palliative care. Through innovative technology of virtual reality, we are able to create a transformative impact on the UTA nursing department, providing a safe, comfortable, and effective approach to build confidence in handling challenging and unfamiliar situations—thus, revolutionize nursing education and foster a generation of compassionate, skilled, and resilient healthcare professionals.

Mission

Our mission is to develop an immersive and realistic VR simulation encompassing four distinct hospice care scenarios, faithfully mirroring the patient's journey from inception to the end of life. These scenarios encompass caring for patients both in a hospital setting, in their homes, and after they have passed away. By leveraging this innovative VR technology, we aim to provide nursing students with invaluable experiential learning opportunities that deeply engage and prepare them for the complexities of real-life caregiving situations. Through our empathetic and trauma-minimizing approach, we aspire to equip the next generation of nurses with the confidence, skills, and compassion necessary to deliver exceptional end-of-life care.

Key Requirements

The software will offer four scenarios encompassing various situations that a Hospice nurse may encounter during their work. It will also include a comprehensive tutorial to instruct users on interacting with objects, navigating the environment, and engaging with the dialogue system. The software is specifically designed for the Quest 2 headset in its untethered configuration, with a focus on mitigating motion sickness through thoughtful design and implementation.

Design Overview

The VR Palliative Care Simulation consists of four layers: Managers, Game Objects, Enums, and Data Objects. These layers interact by exchanging messages and utilizing each other's functionalities to run the game effectively.

1. Manager Layer:

The Manager Layer oversees the systems responsible for the game logic within the application, handling functions related to scenes, patients, events, audio, players, and scenario data. Working in coordination with other layers, it provides both visual and functional feedback to users during their time in the application.

2. Game Object Layer:

The Game Object Layer handles the interactions between game objects and other systems in the world. It receives inputs from the Management layer or other game objects.

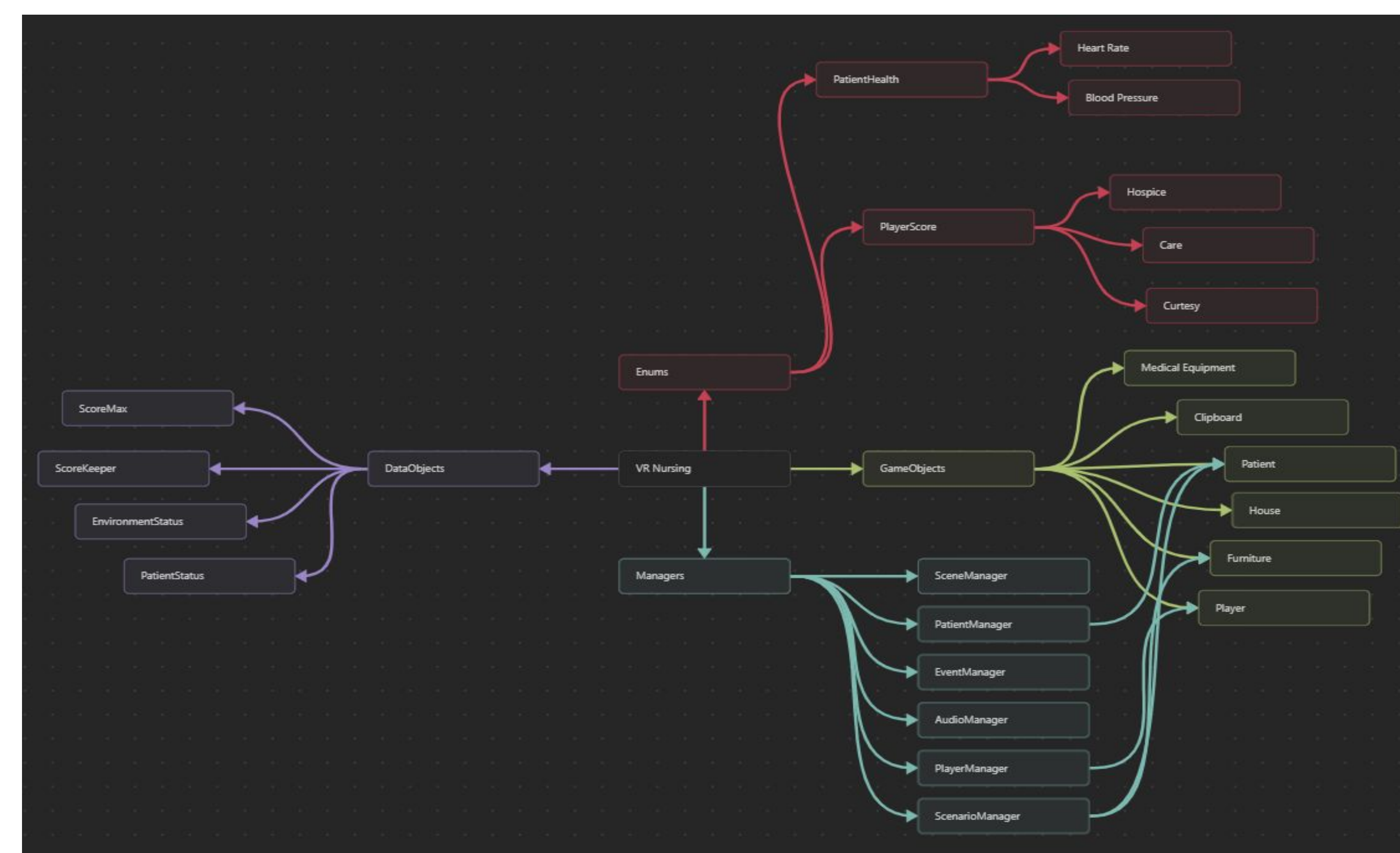
3. Enum Layer:

The Enum Layer stores values related to player performance and patient stats, with subsections for Patient Health and Player Score. Its main role is to communicate with other layers and provide necessary values upon request.

4. Data Object Layer:

The Data Object layer facilitates communication between the application and the database, managing data objects and entities such as scores, the environment, and the patient during each scenario play-through. This layer stores, updates, and retrieves these objects and entities to display the user's completion grade for a scenario.

Architecture Design Diagram



Current Status

As of the current status, our VR nursing hospice application is progressing well and consists of a tutorial and four immersive scenarios aimed at training nursing students in various aspects of hospice care:

1. Tutorial - VR Introduction:

The tutorial will provide a brief introduction on how the user will be able to navigate throughout the application, such as moving around the space and interacting with objects.

2. Scenario 1 - Transition to Palliative Care:

This scenario focuses on caring for the patient in the hospital and guiding the transition from regular care to palliative care.

3. Scenario 2 - Home Preparation:

In this scenario, students are tasked with preparing the patient's home for hospice admission by identifying and removing hazardous objects or potential obstacles that could hinder care delivery or patient safety.

4. Scenario 3 - At-Home Hospice Care:

This scenario involves hands-on experience with providing hospice care in the patient's home. Students will learn to conduct focused assessments, including vital checks, medication administration, suction procedures, and effective communication with the patient's family.

5. Scenario 4 - Post-Mortem Care:

The fourth scenario deals with post-mortem care. Nursing students will be taught how to handle the sensitive situation of pronouncing a patient's death and preparing the body for family viewing, ensuring a respectful and dignified process.

With all the necessary implementation of the tutorial and the four scenarios, only further specification will be required for improvements.

Future Work

The future work and outlook for the project to become finalized will be: user testing and feedback, tutorial enhancement, and dialogue system refinement.

1. User Testing and Feedback:

Conduct extensive user testing with nursing students and healthcare professionals to gather valuable feedback. Incorporate their insights to refine and improve the overall simulation experience.

2. Tutorial Enhancement:

Further develop the tutorial to provide a seamless and informative introduction to the simulation and ensure it covers all essential interactions and functions, helping users become familiar with the virtual reality.

3. Dialogue System Refinement:

Work on enhancing the dialogue system to create more realistic and meaningful interactions between the user and virtual patients. Focus on improving the responsiveness and empathy of the virtual characters.