



Knight Foundation
School of Computing
and Information Sciences

School of Computing & Information Sciences

Spring 2023 Senior Design Project

Digital Twin Room Emulator and Asset Manager

Student: Andrew Andersen

Mentor: Steven Luis

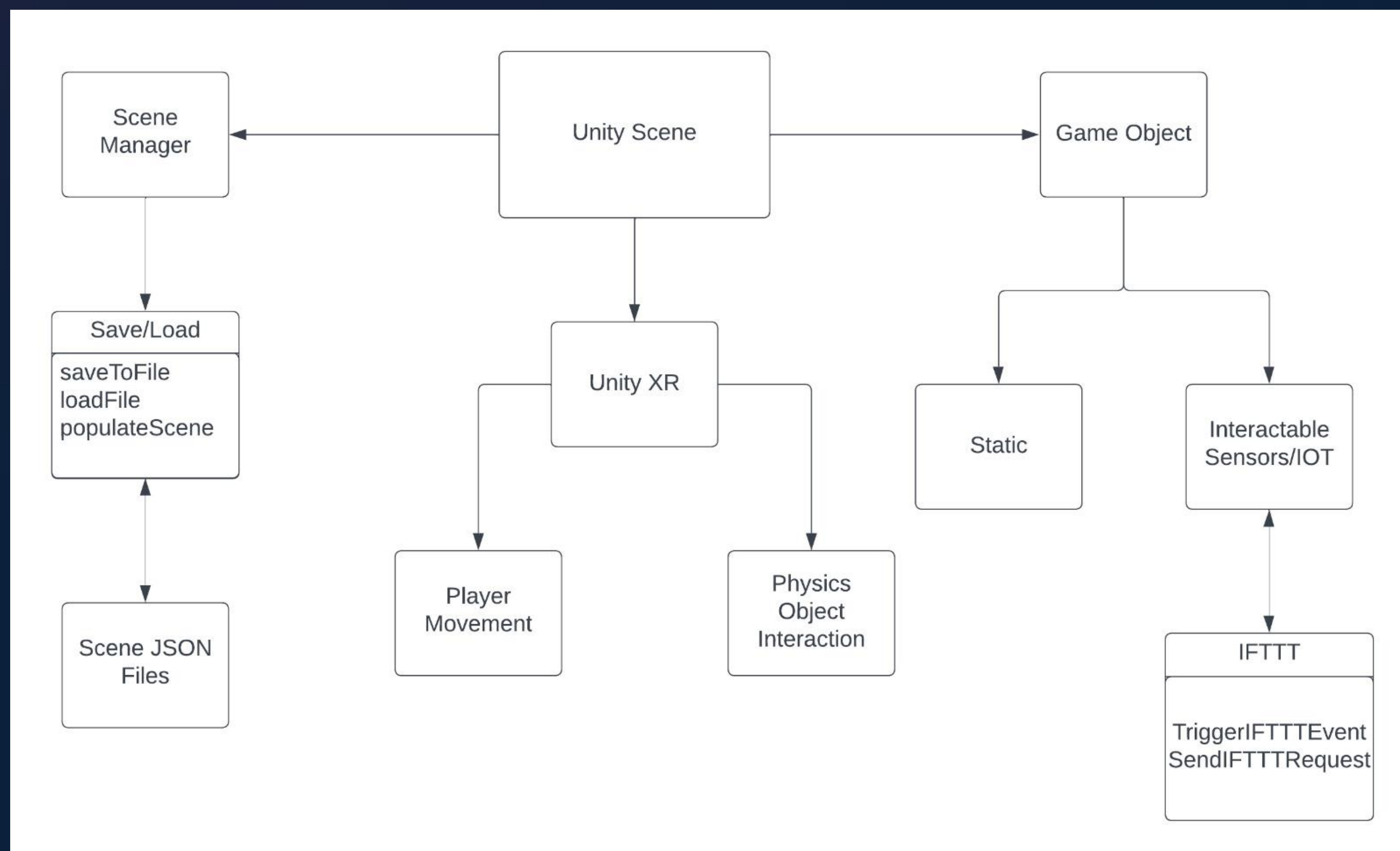
Instructor/Faculty: Masoud Sadjadi, Florida International University

PROBLEM

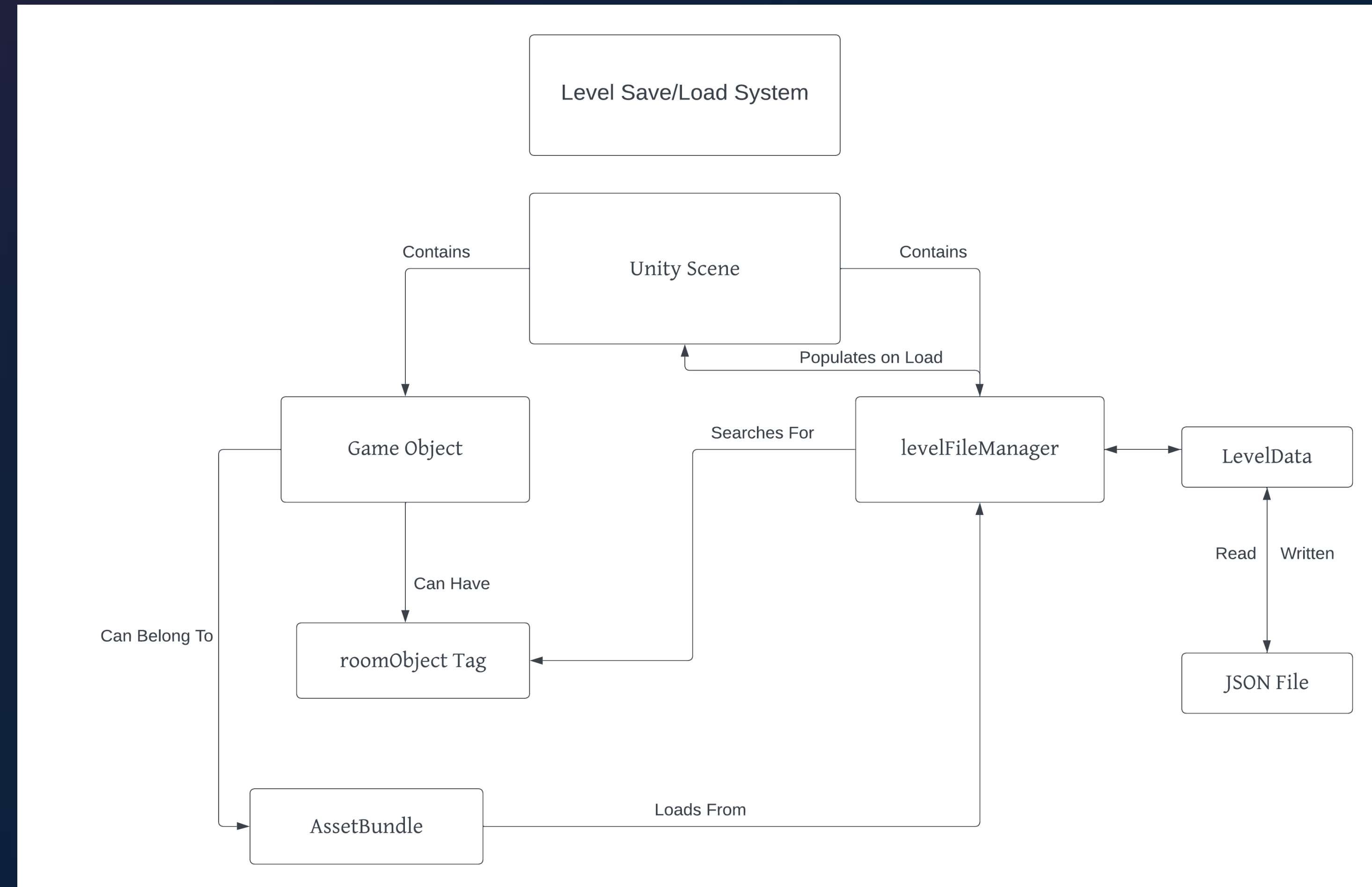
1.To create a Digital Twin simulated lab environment Using unity that may include a level editor in future.

2. To meet that end a system needed to be created to enable the application to save and load any number of rooms in a semi-compact format.

SYSTEM DESIGN



FEATURE SPECIFIC SYSTEM DESIGN



SUMMARY & THE PROJECT'S FUTURE

The goal of the project is to create a Digital Twin environment and to that end a system for saving and loading levels had to be created.

In the future this project is panned to expand its Digital Twin simulation capabilities as well as potentially add a room editor to allow for the creation of any number of rooms.

This project has potential to become very interesting and incredibly useful in with some future work.

REQUIREMENTS



C# , IDE
VR Hardware

IMPLEMENTATION

Everything that will need to be saved or loaded is a Unity Prefab object associated with a Unity AssetBundle File. The system saves a scene by recording metadata about all objects with the proper tag out of the unity scene. It then saves that metadata to a JSON file with a given name. Then to load the data it reads the metadata and creates clones of the objects from the associated AssetBundles after all required bundles for the scene are loaded into memory.

VERIFICATION

QA testing done by our group members on the VR setup as well as Unity's debugging tools were used to verify feature functionality.



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ACKNOWLEDGEMENT

The material presented in this poster is based upon the work supported by Steven Luis. We'll thank Steven Luis for his assistance and mentorship that I/we received throughout the senior design project.

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