

Final Project Proposal

Team: Logic Legends

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Proposed Project: Spatial Archive

1. Summary

Spatial Archive aims to enhance spatial mapping data management for extended reality (XR) devices like the Microsoft HoloLens 2. Our project will streamline data transfer to a server and offer intuitive visualization methods. Through Unity, mesh data will be extracted, transmitted to the server, and stored with timestamps. Users can easily select and visualize meshes using OpenGL, improving data accessibility and usability in XR environments.



Figure 1. Microsoft HoloLens 2

2. Background

As XR devices become more common in working environments, leveraging built-in mapping capabilities replaces the need for external sensors. Streamlining storage and visualization methods is imperative for utilizing this data effectively.

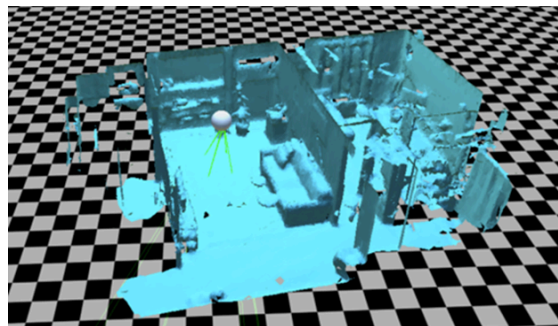


Figure 2. An example of a spatial mesh generated from the Microsoft HoloLens 2

3. Objective

Our proposed project, Spatial Archive, will store and visually present spatial mapping data, meeting project requirements by leveraging complex components rooted in methods learned in class.

4. Deliverables

Our project aims to develop a networking solution for transferring spatial data from the Microsoft HoloLens 2 to a dedicated server, along with a method for visualizing spatial maps.

5. Approach

We will extract spatial mesh data from the HoloLens 2 using a Unity application, then transmit it to a server via a socket connection (e.g., web server or HTTPS). The data will be stored on the server with timestamps using Hash Tables. Users can select a mesh for visualization through OpenGL methods.

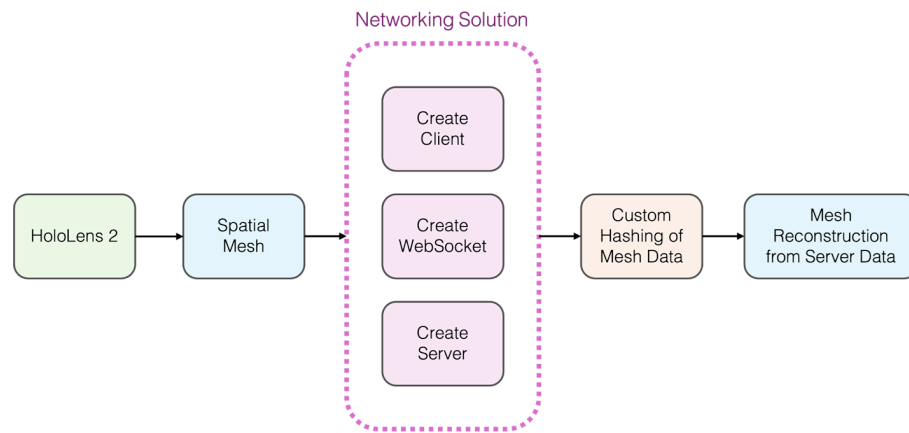


Figure 3. Flowchart of our proposed approach

6. Reach Goals

If needed, we will expand the project to include mesh comparison, segmentation, or classification functionalities.