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Fall Term Retrospective

Section 1: Brief overview of project goals and outcomes.

Our goal for this project is to help geographical scientists visualize their research in a realistic virtual geographic environment with real geographic datasets. The outcome of the project is to help the geographic storytellers vividly present their content and attract the audience by improving the visual experience. The generated and verified visualization workflow from this project will reduce the time cost that can be used for making more valuable research in the future.

Section 2: Current status of project.

In the first sprint, we contacted Civil Engineering Prof. Daniel Cox as our user, and discussed a virtualization scenario to visualize tsunamis happening in Seaside, Oregon. We received some geographic datasets from Prof. Cox, which include a heightmap, building footprints with damage information, street network, and tsunami elevation data. Our goal is to visualize these datasets in Unreal Engine with other tools like ArcGIS and CityEngine.

We currently converted the heightmap to the correct format, and generated a rough landscape of Seaside in Unreal Engine. We also generated some simple buildings and streets models in CityEngine, and imported them into UE4. In addition to this, we have used scans of real life environments to procedurally texture and place trees and foliage in the appropriate places.

Next Sprint:

- Optional Work During Winter Break

  Sprint Backlog
  - PC Mode
  - VR Mode
  - Terrain Physics
  - Lighting Improvements
  - Project Size Improvements
  - Advanced Day/Night Cycle
  - Tsunami Simulation Mode (Core Features)
  - Document Workflow

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Section 3: Problems that need resolving.

- Realistic water visualization
- Realistic day/night cycles
- We currently only have some random buildings and streets generated by default rules in CityEngine. We still need to work on the building damage stimulation caused by tsunamis. Our plan is to generate our own rules in CityEngine that can procedurally generate damaged buildings in varying damage levels.
- Project File Size (this should be resolved when the project is built into an executable file/folder)
- Improving the framerate regarding tsunami visualization

Section 4: Project highlights

- Accurate mesh of Seaside, Oregon from heightmap
- Accurate projection of a satellite image onto the terrain
- Procedural texturing and foliage from masks
- Procedural buildings from aerial footprints
- Animations with water heights
- Promising framerates

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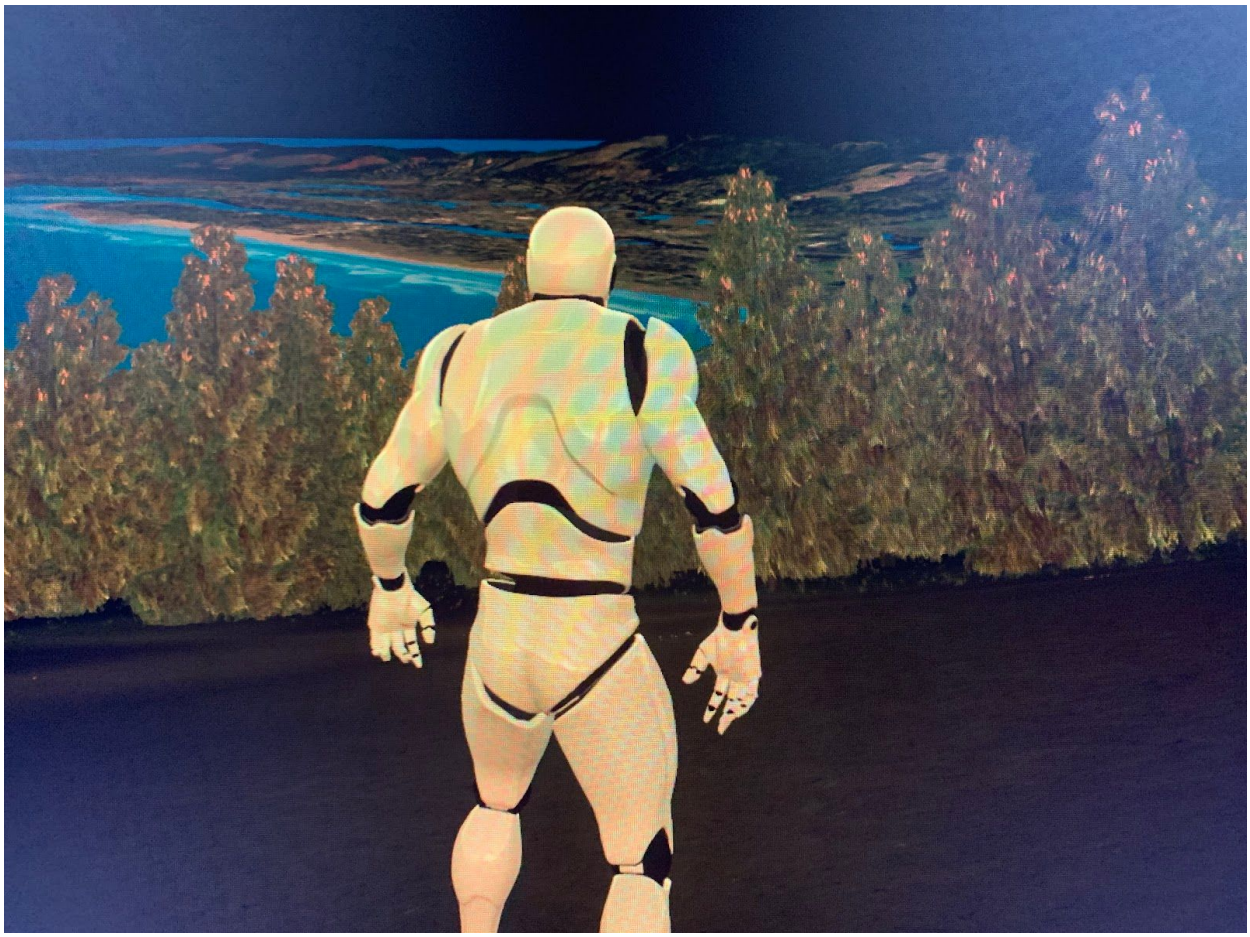

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Section 5: Brief summary of design review feedback.

We did not receive extensive or detailed feedback from our peers given that each of us individually submitted our thoughts to the professor, but they all verbally expressed that they were impressed by what we have accomplished so far. One of them asked questions regarding how the buildings and foliage would be procedurally generated in Unreal Engine, however that was the extent of the feedback given by our peers.