

3D GIS Term Project

Points: 100 Points

Prompt

The term project will be completed as an entire class, and the goal will be to generate a set of 3D visualizations of a hypothetical geographic extent. The extent should be relatively small, such as a small college campus, downtown area, industrial complex, park, or historic location. We may collectively decide to create a model of a real location, such as a historical site, or a fictional location (e.g., a settlement on Mars). For this geographic extent, we will create multiple 3D representations of the extent including the following:

1. A physical model of the location created using a combination of 3D printing and physical building/sculpting (think model railroad layout)
2. A “digital twin” of the site presented using 2D and 3D maps embedded within web apps
3. A virtual 3D model of the site that can be interactively navigated within Unreal Engine
4. A virtual reality render of the site also accessible through Unreal Engine

As a group, we will need to do the following:

1. Plan the layout of the location including the physical terrain, surface cover and vegetation, buildings, and road/path/rail/streams networks that intersect it
2. Create a digital terrain model (DTM) for the site using real or generated data
3. Generate 2D geospatial data layers for the scene components
4. Generate 3D models of buildings and structures within the scene using Blender
5. Import the 3D models back into a GIS
6. Publish 2D data, 3D data, maps, and scenes to ArcGIS Online
7. Create web maps, scenes, and apps
8. Generate a 3D scene with associated textures in Blender and port the products into Unreal Engine
9. Configure the environment for exploration using a playable character and VR locations

We will present our products during our scheduled final time to the general public.

Deliverables

1. Organized file folder of all assets: 2D and 3D vector data, 3D models, textures, 3D printing files, and Unreal Engine files and assets
2. Make all data available through a webpage linked to the WV View website

Points

Up to 100 points will be assigned based on the quality of the resulting:

1. Geospatial data
2. 2D maps, 3D scenes, and web apps
3. 3D models and associated textures
4. Physical model and associated assets
5. Unreal-engine based interactions