Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
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Assignment 1 - Virtual field trip of a Dublin landmark

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Sketchlab link : https://skfb.ly/purLK

a) Model description

The 3D model constructed is a detailed reconstruction of the Dublin landmark that sits in the middle of the Department of Education. It is called the Wishing Hand by Linda Brunker. It consists of a hand sculpture and a circular base and was recreated using photogrammetry. The purpose of this reconstruction was to generate this realistic 3D model that can be used for a virtual field trip.

Agisoft Metashape was the software used to generate the model from a set of high resolution images taken from multiple angles to capture every minute detail. This software processed these images into a dense point cloud and were subsequently converted into a mesh. I had to use Agisoft metashape since Meshroom isn't supported on Mac. The raw 3D model contained noise, irregular edges and unwanted fragments. Blender was utilised to conduct the post-processing. It was mainly used to clean up this unwanted geometry, improve the model's accuracy and enhance its visual appeal.

b) Scan settings

Number of photos: 97
Image Resolution: 4284×5712
Focal length: 6.765 mm
F number: f/1.78
Exposure time: 1/172
Computation Time: 35 mins (approx.)
Softwares Used: Agisoft Metashape, Blender, Unity
Mesh Type: Polygon mesh -> converted to triangle mesh format for better compatibility

c) <u>Screenshots</u>

Original / unedited 3D model (Agisoft Metashape/ Meshroom)

Model
Perspective 30°
2,966,879 faces, 1,485,043 vertices
Z
Y
X

Model
Perspective 30°
2,966,879 faces, 1,485,043 vertices
Y
X

Edited 3D model pictures – Blender

Blender was used for removing unwanted geometry and background noise as well as removing floating surfaces that weren't part of the landmark. Scaling and positioning was also done in Blender and the model was converted into a triangle mesh format for better compatibility with Unity.

d) Future work

Optimising mesh: reduce polygon count and while preserving model quality.

Texture and material improvements: Enhancing the textures with better resolutions.

User interaction: Add touch based interactions for an immersive AR experience.

Collision detection: Create a collision mesh to stop objects from passing through.

Reconstructing entire landmark area: Capturing surrounding areas as well.