

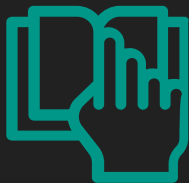
Global Mobile Software LLC

City Hall Photogrammetry

Sponsor: Armen Hacopian

Brandon Passmore
Vashu Patel





Pre-requisites

- **Photogrammetry** is taking sequences of pictures of a particular object and converting it into a *virtual 3D object* that can be used for both AR and VR purposes.
- It can be done two ways:
 - **Manual** - In this you build the shape of the object and apply the textures (extracted from pictures manually)
 - **Using AI softwares** - Apps such as *PolyCam 3D*, *Luma*, etc help build the model automatically using the series of pictures that one took.
- **Blender** is the best option to edit and design any 3D model accordingly.
- **Unity** is used to build the world with the model and things around it.
- **Spatial** is used to upload and host the world in VR.



Initial Prototype

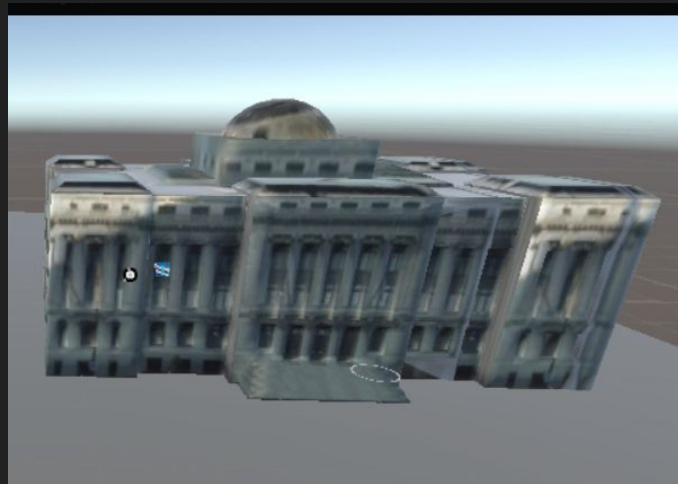
Process

- Use Google Satellite Images as Textures due to lack of technologies.
- Create an initial shape of the model.
- Apply the textures on that model.



Issues

- Extrusion Process damaged the textures.
- Details faded away.
- Satellite Images weren't up-to-date
- Gave a dull vibe.





Final Model

Process

- Performed Drone Photogrammetry
- Auto-Created the Model using [WebODM](#)
- Blender Polishing

Issues

- Had gaps/holes as drone couldn't reach remote areas.
- Too many polygons/faces/vertices.
- Decimation increases gaps.



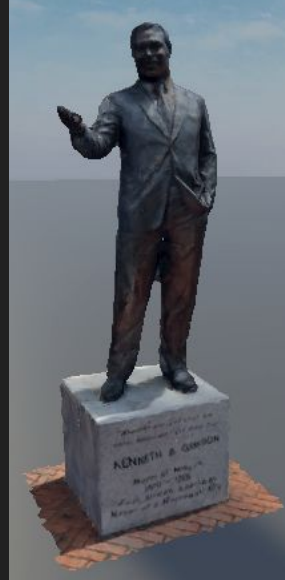


Statues Photogrammetry

Process

- Took sequences of pictures of each statue
- Used PolyCam 3D Software to auto-build the models.
- Exported as .FBX and .OBJ files.
- Cleaned up and decimated in Blender.

Kenneth A. Gibson Statue



George Floyd Statue





Other Assets in the Space

- Road
- City of Newark Emblem
- Animated Vehicles
- Skyboxes
- Traffic Lights
- Music





Remarks/Conclusion

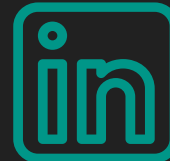
Brandon:

- Over the course of the past weeks in this program I deeply developed my skill when it comes to creating environments in Unity to upload to Spatial.
- It was a great experience with Vashu John Armen and Dave and I felt the team chemistry through the collaboration as well as the great support system.
- I plan to use these development skills in my future for projects and as a recollection just in case I ever need to refresh my memory.

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Vashu:

- In the past 4-5 weeks, I learned a lot about Blender (with zero experience in the past).
- Overall, it was fun working with Brandon, John, Armen and Dave.
- I hope to apply the skills of photogrammetry and Blender in future personally or professionally for NJIT/career.



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Thank you!

- John
- Dave
- Armen
- Raina
- Nicolas