

Assignment 02 (due: 12/2/2019)

Reflection Space: Virtual Reality (VR)

In this project I ask you to find a site of interest on the Purdue West Lafayette campus and create a 3D scan of it with the low-cost Scanse Sweep LIDAR 3D scanning system (or any other scanning system you may have access to). In the second step try to address one or more of the following questions and create a transformative experience of the acquired 3D data in a VR environment using Unity and the Oculus Rift/HTC Vive headset:

- What new or previously unnoticed aspects about a real space do the VR scans reveal?
- What conceptual opportunities do imperfections in the spatial scan offer?
- What new (imaginary) spaces can be created by combining different 3D scans in one VR environment?
- What additions/modifications to the 3D scan of the real site could be helpful to express your idea/provide a commentary.
- What role could sound play in the experience of the 3D scanning data?
- What clues could the 3D scanning data give us about the machines that create it (e.g. self-driving cars, robots, etc...) and their perceptions and misperceptions of world?

The title for this project addresses the relationship between the real space you are investigating and virtual space that represents it: the latter is a reflection of the former. Additionally, your VR intervention should also inspire reflection on the real space it represents and possibly the technologies that helped create it.

The final work should be accompanied by a 300 word (maximum) project description that discusses the idea behind your work, your ideas of what you would like the audience to take away from its experience, existing artworks that you found relevant/inspiring for your own work as well as a brief listing of the technologies used for its creation.

Documentation

I would like to capture both, the process of acquiring the 3D data in physical space as well as how you are going to present this data in a virtual space. So we'll do some video recording in the real spaces you chose to investigate as well as creating screen captures of their VR representations/transformations.

Timeline

There will be an intermediate presentation of students' LIDAR scans (and stitched together/constructed spaces) on **Wednesday, November 13** in the Forge, the Envision Center's collaborative VR space. This setup will allow small groups of students to experience the point cloud architectures immersively and collaboratively with the goal to critique the works in progress before adding final touches (or interactive elements) for the final presentations in class on **Monday, December 2, 2019**.

Resources

3D Scanning systems (we'll have a guest presentation by Drew Sumner, a student researcher in the Envision Center on Monday Oct. 14 talking about his personal experiences using both LIDAR and photogrammetry systems)

- Scanse Sweep 3D scanning system (using LIDAR technology)
<https://www.hackster.io/scanse/sweep-3d-scanner-035a5f>
- Autodesk ReCap 360 (using photogrammetry)
<https://www.autodesk.com/products/recap/>
- Purdue Libraries in WALC has small handheld 3D scanners that can be checked out by students: <https://guides.lib.purdue.edu/LOESMakerTools/Sense>. I haven't tested them yet and their range is limited to smaller objects but this could lead to possibly interesting experiments with scale in your final project...

Relevant Artists/Artworks

- ScanLAB, *Post-Lenticular Landscapes*, 2016
<http://scanlabprojects.co.uk/work/post-lenticular-landscapes/>
New York Times Magazine: The Dream of Driverless Cars, 2015
<https://www.nytimes.com/2015/11/15/magazine/the-dream-life-of-driverless-cars.html>
- Marshmallow Laser Feast, *Into the Eyes of the Animal*, 2016
<https://vimeo.com/140057053>
<http://iteota.com>
- James Frost/Aaron Koblin, *Radiohead: House of Cards*, 2008
<http://www.aaronkoblin.com/project/house-of-cards/>
Making-of video: <https://youtu.be/cyQoTGdQywY>

Relevant Artworks (continued)

- Char Davies, *Osmose*, 1995
<http://www.immersence.com/>
- Finally, here is a nice overview of the use of point cloud scans in contemporary art, compiled by Matter and Form, maker of a compact 3D scanner:
<https://matterandform.net/blog/3d-scanning-in-art>