

Densify Point Clouds: Sprint 2

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Our Redefined MVP and user story

(Old MVP): Pick a part in the photogrammetry pipeline and optimize it

New MVP: Densify the point cloud that could be fed to an AI or user

User: any company that uses point clouds in open source

As a company I would like to densify the point cloud that could be into our open source software



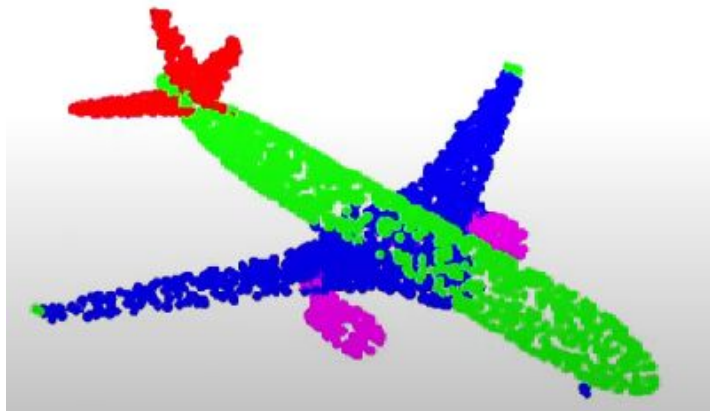
Sprint 2 Tasks

- First research papers that are currently doing work
 - Understand the research and figure out what modules and software the authors use
 - Realize feasibility of integrating their methods into our pipeline
- Set up the development software
 - Install Pytorch 3D and PCL
 - See if it's possible to install packaged on the cloud to make an easier working environment
 - Test software



Achievements

- We found a website that list papers to do with the reconstruction of point clouds that are most reproducible. In doing so we found a paper involving a framework called Torch-Points3D. Its a “modular multi-task framework for reproducible deep learning on 3D point clouds”
- We successfully installed torch-3d onto the SCC using virtualenv and tested a simple example



Our Failures

- We weren't able to install torch-3d on our local systems although we did have success in running the framework on collabs
- We didn't have time to test the PCL library
- We have yet to research a paper with a strict set of instructions in creating a deep learning algorithm for the reconstruction of point clouds so research will continue into sprint 3



Sprint 3 Tasks

- Continue research on papers and start to reproduce results of the research paper we found
- Test advanced tutorials on pytorch 3d
- Start mapping out our pipeline that involves integrating a ML module in pytorch 3d
- (Reach goal) Install and play around with open 3d and see if the framework is more user friendly



Work Cited

- Torch-3d paper
- <https://ieeexplore.ieee.org/abstract/document/9320410>

