CS184 Project Proposal: Point Cloud to Mesh
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Description:
This project aims to convert a set of point cloud into meshes. It will also supports the reverse operation, that is given an image it will convert it into meshes and point cloud.

Problem Description:
Point cloud is often obtained from 3D scanner, and sometimes we want to get a map of the environment. By converting the point cloud to meshes, we can get a picture of the surrounding environment after scanning. We can also map the image to the meshes to obtain a realistic view of the environment.

Goals and Deliverables:
(1) The project will implement a mesh reconstruction algorithm on point cloud. It should generate meshes and display its visualization.
(2) The project might includes a GUI that can toggle between meshes and point cloud view. In addition, the project may generate meshes and/or point cloud from an input picture. It is also anticipated to map the texture of the original image to the meshes to create a realistic 3D view.

Schedule:
7.31~8.2
Research about the topic; choose appropriate algorithm
8.3~8.9
Implement and test the algorithm; finish milestone deliverable
8.9~8.13
wrap up the implementation; start on the advanced part of the project; prepare for final presentation; create project video and project webpage

Resources:
Simple algorithm: https://vgc.poly.edu/~csilva/papers/tvcg99.pdf
Challenging algorithm: http://research.microsoft.com/en-us/um/people/hoppe/poissonrecon.pdf
3D mesh model: http://graphics.stanford.edu/data/3Dscanrep/