

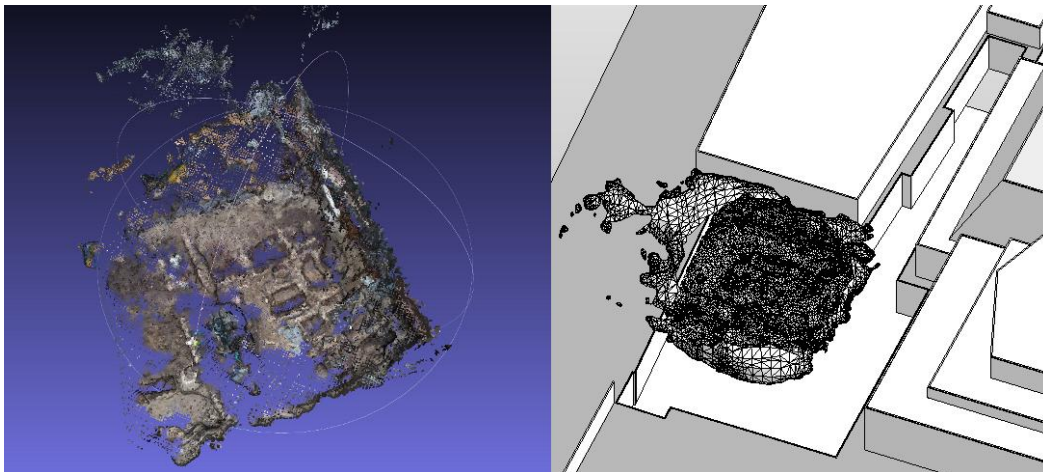
Software Lab:

Modeling: ★★★★★
Mathematics: ★★★★★
Programming: ★★★★★

Automatic Fitting of Point Clouds into 3D Models of Excavation sites to calculate progress information

Setting

The progress of excavation sites is in many cases delayed by unpredicted influences, for instance weather or changes in soil consistency. In order to obtain data about the current state of such a process, we use camera- and laser-scanning techniques to obtain point clouds from excavation sites. The point clouds will be provided in ply format. In order to obtain an actual progress ratio we need to match the point cloud to fit a 3D model of the site. The model will be provided in Revit format. Furthermore we need to calculate the progress of the excavation process by comparing the volumes of the point cloud and 3D model.



Task

The Software Lab will include the following tasks

- You will receive a point cloud with normal and color information in ply format.
- Create a mesh from the point cloud.
- Fit the mesh into a 3D model of the desired state.
- Calculate the ratio of the pit that has been excavated.
- Write a Revit plugin that includes the point cloud into a model, requiring minimal user interaction.

Supervisors

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