

Software Engineering Project Weekly Report

3D-KORN

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1 Tasks completed

- Issue solved: Fixed building problems with PCL library for all team members.
- Assigned the deadlines of main sections for software development:
 - INSERT GANTT DIAGRAM
- Defined the minimal software features that clearly define the scope of our work
 - Editor Features:
 - * Save and load editor states (pointclouds and its groups, Redo/undo stack...)
 - * Select one or more PCs.
 - * Operations for one or more pointclouds: Move, scale, rotate, plane crop.
 - * Operations for two or more pointclouds: Merge.
 - * Undo/Redo any of the operations.
 - Scan Features:
 - * Have multiple views of camera to assess correctness of captures and identifying possible sources of problems in real-time, such as color camera output, depth map, pointcloud or current partial 3D registered model.
 - Export Features:
 - * Select output dimensions (in mm).
 - * Limit number of faces in exported geometry.
 - * Change model orientation for export
 - * Output file format
- Understood Mesh Handling through `vtkRenderWindowInteractor` class and `PCLVisualizerInteractorStyle` for customization of mouse and keyboard input commands through GUI.
- POC progress made at translation, plane cropping and mesh watertighting. With some issues on hole filling that will be discussed in Section 2: Issues.
- Discarded KinectFusion and DynamicFusion algorithms and finally decided to use 3D registration algorithms from PCL library, the specific algorithm used is still to be discussed. We choose this option as it will work regardless of the final sensor used (KinectV2 or Intel R200) and other team members can continue with development related to this part.

2 Issues encountered

- Issues with hole filling and watertighting after plane crop, as hole is not reconstructed as expected. The work scheduled for next week will be specified in Section 3.
- With our current version of PCL (1.6.0) interface through OpenNI is not compatible with KinectV2 and the OpenNI2 interface is not fully implemented. Moreover, the Kinect SDK 2.0, which is the minimum required for interfacing with KinectV2, is compiled with MSVC2012 and is not compatible with our compilation of PCL (MSVC 2010).
- Rough UI layout and the UML work couldn't progress as expected as we still don't have all specifications clear for the project. The main bottleneck has been interfacing with the sensor and deciding on an algorithm for 3D registration. Some members have been reassigned to the teams that have the most trouble to help with the bottlenecks identified.

3 Tasks for this week

- Interfacing with sensor

Tasks:

- Interfacing the sensor from Windows
- Generate point cloud from scan

Members: Pamir, Dani, Albert, Eze

- Operations on point cloud

Tasks:

- Find workaround for regenerating a watertight mesh after plane cropping.
- Adapt and study the POC code for project coding standards.

Members: Clement, Nayeem, Luca, Roberto, Meng

- Software Architecture

Tasks:

- Complete the stable high level design (UseCase diagram) and make the low level design(Class diagram).

Members: Umamashwaren, Benjamin