ROVI: Exercise 4 - Point Cloud Processing

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1 Introduction

This weeks exercise is about pre-processing of point clouds using different techniques. This exercise will not cover all processing operations in PCL, but give and introduction of how pre-processing can be used.

The exercise use the point cloud generated from the Dense Stereo Exercise. You can use a point cloud you have generated yourself, or the one provided from BlackBoard.

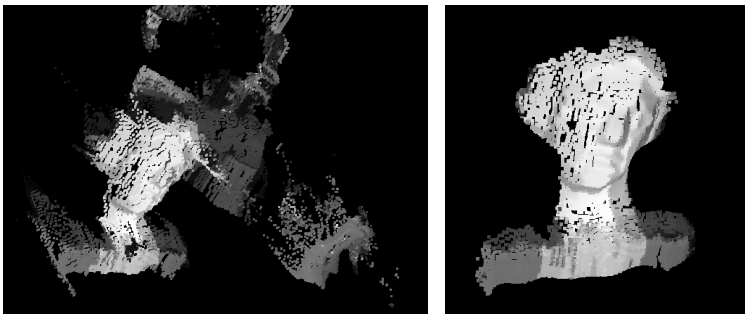
The goal is to filter the point cloud to obtain a denoised point cloud of the bust (see Fig. 1). You are to implement the following filters:

- Voxel Grid
- Outlier Removal
- Spatial Filter
- Smoothing

There is a code template on BlackBoard along with the test cloud. You are to implement the following functions from PCL:

- pcl::VoxelGrid<pcl::PointXYZRGB>
- pcl::StatisticalOutlierRemoval<pcl::PointXYZRGB>
- pcl::PassThrough<pcl::PointXYZRGB>
- pcl::MovingLeastSquares<pcl::PointXYZRGB, pcl::PointXYZRGBNormal>

Remember you can visualize the point cloud using *pcl_ viewer*.



(a) Original (b) Filtered

Figure 1: Original point cloud and filtered version.