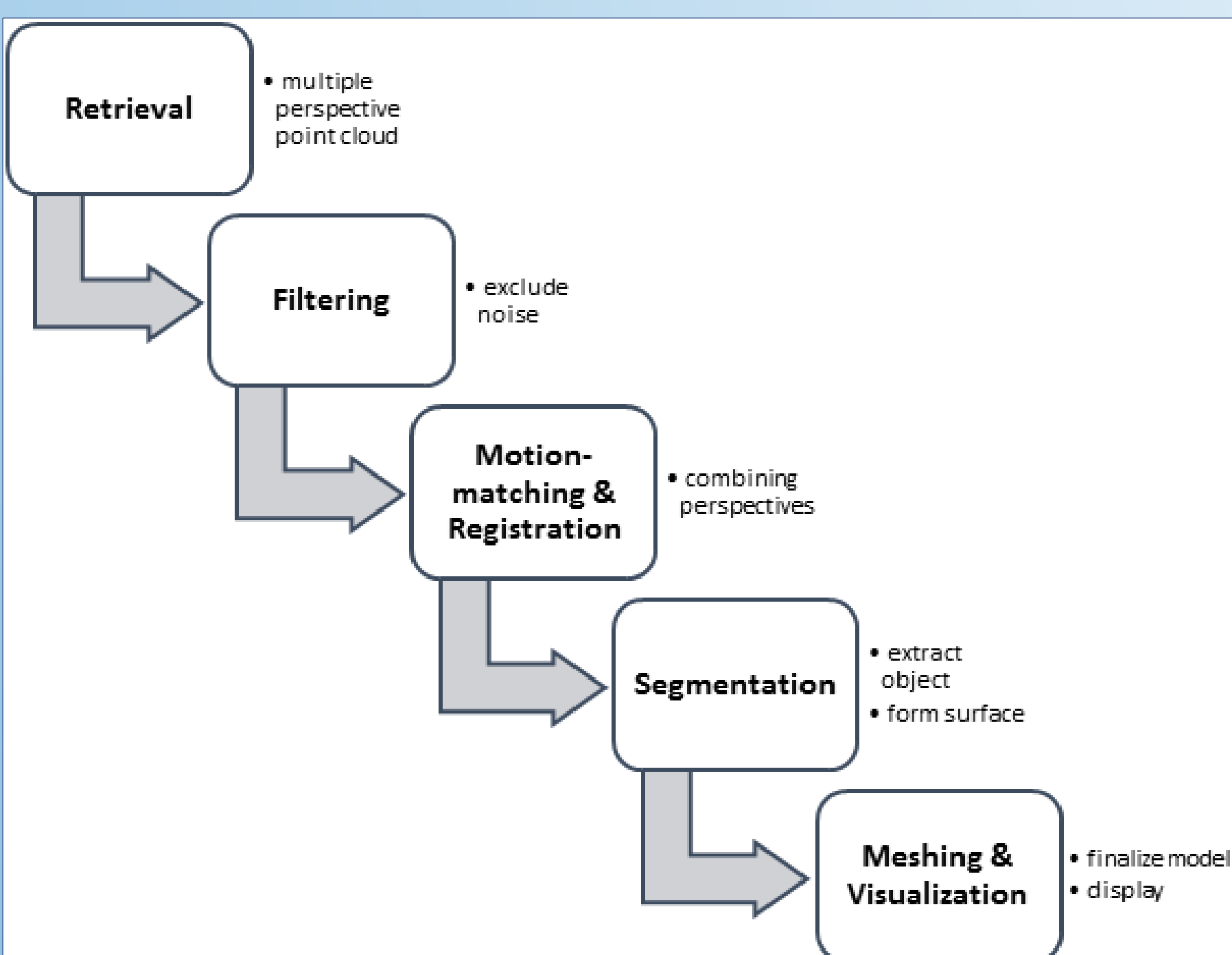


Introduction

- 2D images or textual descriptions of objects are not enough. From furniture shopping to large scale modeling, 3D object reconstruction can eliminate the need to have the physical object. The model would provide sufficient information such as scale, color, texture, etc. One possible application for 3D object reconstruction is to create a model for a piece of furniture you are considering purchasing. Inserting the furniture into an image of your home can give you an idea of how well it fits in your home, aesthetically and literally. Other applications include interior design, modeling larger scale systems, and providing a CAD-style overview for designers. Our project will involve image/video processing and extracting significant features through area learning and depth perception.

Approach



Algorithms

Voxxlr for Point Cloud data collection

Point Cloud Library (PCL)

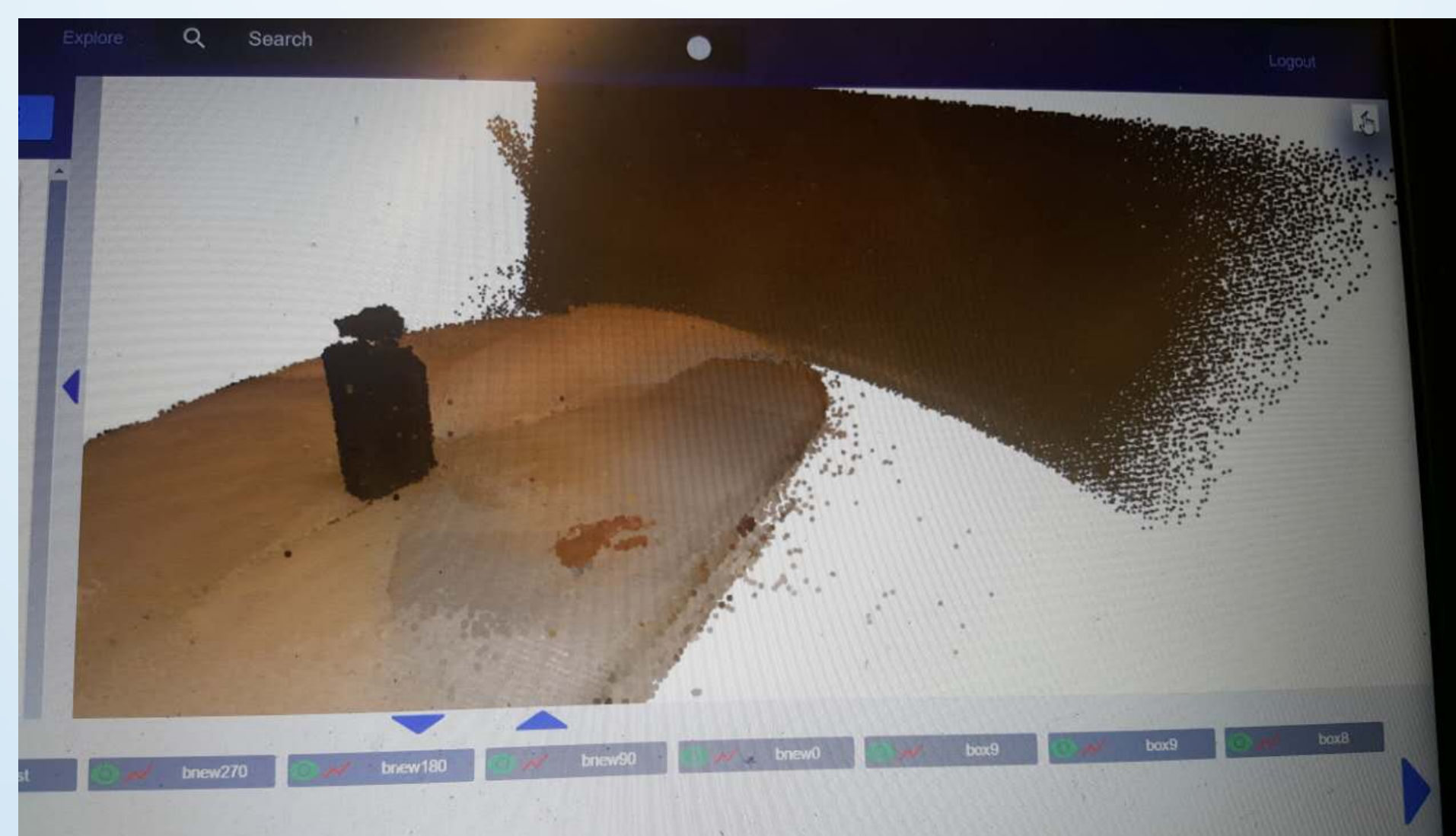
Statistical Outlier Removal

Incremental Pairwise Registration
Iterative Closest Point (ICP)

RANSAC Segmentation

Fast Triangulation Meshing

Results



Obstacles

Problem	Solution
Android Studio File I/O	Voxxlr
PCL setup	Windows + Visual Studio
Registration	Lazy Susan
Tango Visualization/Demo	Voxxlr
Sharing Tablet	Spend ECE money

Demo

Point Cloud to Object Guessing Game

Data Collection Setup

Voxxlr Laptop Interactive Session

