**Capstone 44 - Object Segmentation for robot using depth camera**

**Requirements Document**

|  |  |  |
| --- | --- | --- |
|  | **Requirement** | **Priority** |
| 1 | Detect a single simple object on a flat plane, at an arbitrary position in the camera’s viewing range | must |
| 2 | Detect the basic object on a plane at predefined level of noise (light, shading, texture) in the plane | must |
| 3 | Track the robot hand and continuously output its position for use by the robot team | must |
| 4 | Perform the segmentation at a minimal rate of 1 frame per second | must |
| 5 | Convert the coordinates of the object/hand from camera-space to world-space | must |
| 6 | Create a bounding box around the segmented object | must |
| 7 | Provide a debugging interface for the program | must |
| 8 | Be well documented enough to enable outside developers to contribute to the source. | must |
| 9 | Perform the segmentation at a rate of 5 frames per second | should |
| 10 | Detect a wider variety of objects, including shapes & colors | should |
| 11 | Be open source | should |
| 12 | Make the object parameters configurable | should |
| 13 | Self-tune algorithm based on lighting conditions, object textures, etc. | may |
| 14 | Able to detect multiple objects on a plane | may |