Object detection using boundary representations of primitive shapes

In this paper, an approach for matching of primitive shapes detected from point clouds to boundary representations of primitive shapes contained in CAD models of objects/workpieces is presented. The primary target application is object detection and pose estimation from noisy RGBD sensor data. This approach can also be used to determine incomplete object poses, including those of symmetrical objects. Detection and reasoning about these under-specified object poses is useful in several practical applications such as robotic manipulation, which are also presented in this paper.