

Deep Learning Based 6D Pose Estimation for Bin-Picking Using 3D Point Clouds

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Abstract : Estimating the 6D pose of objects is a core step for robot bin-picking tasks. The problem is that various objects are usually randomly stacked with heavy occlusion in real applications. In this work, we propose a method to regress 6D poses by predicting three points for each object in the 3D point cloud through deep learning. To solve the ambiguity of symmetric pose, we propose a labeling method to help the network converge better. Based on the predicted pose, an iterative method is employed for pose optimization. In real-world experiments, our method outperforms the classical approach in both precision and recall.

Keywords : pose estimation, deep learning, point cloud, bin-picking, 3D computer vision

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