Effective Deployment of CNNs for 3DoF Pose Estimation and Grasping in Industrial Settings

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Overall Pipeline of LOOP

DCNN-based Object Detector

Start

Training

Inference

Converts Oriented to Unoriented Labels

Auto-Generated Dataset From Video Sequence

Converts Unoriented to Oriented Labels

Unoriented Predictions

Oriented Predictions

Automatic Dataset Generation

Unoriented-to-Oriented Bounding Boxes

Oriented-to-Unoriented Bounding Boxes

Qualitative Evaluation

Proof-of-concept Pick&Place

1) Choose a target  
2) Centering Object  
3) Centered Grasp  
4) Approach  
5) Relieve  
6) Release gripper

Source Image  
Unoriented Predictions  
Oriented Predictions

Simple Scene  
Hard Scene