

Grasping has always been a great challenge for robots due to its lack of the ability to well understand the perceived sensing data. In order to accelerate the speed of the grasp detection, reference rectangles are designed to suggest potential grasp locations and then refined to indicate robotic grasps in the image. With the proposed CNN model, the graspable scores for each location in the image and the corresponding predicted grasp rectangles can be obtained in real time at a rate of 85 frames per second on a graphic processing unit. The model is evaluated on a real robot-collected data set and different reference rectangle settings are compared to yield the best detection performance. The experimental results demonstrate that the proposed approach can assist the robot to learn the graspable part of the object from the image in a fast manner.

Grasping from an image composes the following two components:

- (1) extracting features from the image. the features should be representative and informative enough to represent the grasping behavior.
- 2) training a classifier and identifying the good grasp locations in the image. A crucial problem in this stage is how to find potential graspable locations in a fastest way so that the robot is able to grasp an object in real time.

Conclusion - The grasp rectangle¹ is used to represent the grasp in an image. In this way, the robotic grasping planning problem can be regarded as a detection problem that is profoundly investigated in the computer vision community. A commonly used approach to detect the grasp rectangle is to use the sliding window method and identify the graspability of every local patch.

LINK TO COLAB FILE -

https://colab.research.google.com/drive/1_Kob3iq_oz9kqova2sRLq7mFzvWn5mXB?usp=sharing