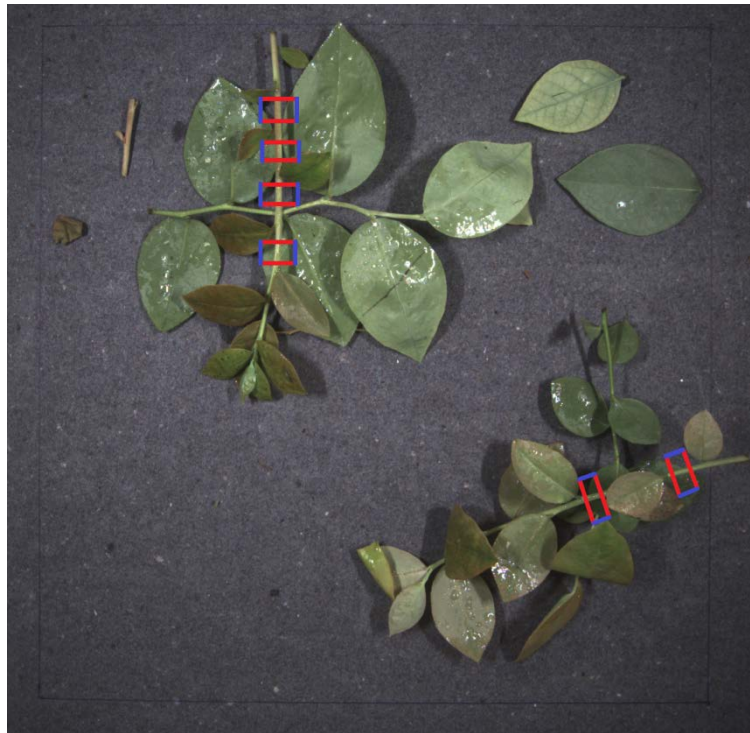


Thesis

Deep Learning-Based Grasp Detection



Background

The grasp describes how a robotic end-effector can be arranged to successfully pick up an object. Humans see objects and can almost immediately determine how to pick them. The capabilities of robots lag far behind. Robotic grasping and manipulation is a critical challenge. Recent work on grasp detection focus on the problem of finding grasps solely from RGB or RGB-D data. These techniques rely on machine learning methods to find the features of a good grasp from data.

IAT and its partner in the industry are developing a robotic unit for handling the cuttings-produced plants. In this system, the robot arms should sort the cuttings on the conveyor belt. Therefore, grasp detection is a major task for these robot arms, and this thesis is going to address this task with deep learning-based methods.

Tasks

- Literature research of machine learning approaches for robotic grasp detection.
- Selecting a suitable method for the IAT robotic units, based on the result of the literature research.

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- Implement the method and train it with standard available datasets.
- Modify the annotation of the IAT dataset of plants according to the selected method.
- Re-train the implemented network with IAT dataset of plants and analyze the result.

Qualifications

- Understanding of machine learning and image processing.
- Good programming skill in python.
- Self-motivated and passionate about machine learning.