

Autonomous Pick and Place System

Assistive Robotics for Amazon Centers

Project

Amazon Robotics specializes in manufacturing lead technology for future Amazon fulfillment centers. Due to rapid growth, Amazon is planning to expand by creating new fulfillment centers all across the US. To support this exponential expansion rate, Amazon Robotics is augmenting their existing capabilities with robotic assistive systems.

Problem

The most common operation in fulfillment centers is the “pick and place” operation on ordered items into shippable containers. The system will handle a variety of items that are able to be fit into totes, the current temporary storage unit used by Amazon. These items with, varying dimensions, weights, and characteristics will be autonomously placed by the system onto trays, the newer storage unit.



Metrics

Units per Hour

- Average rate of pick and places

Eligibility

- Objects able to be picked and placed
- Ineligible objects handled by person

Percent Tray Space Used

- Objects are packed tightly onto tray

Solution

SEE



1. Items moved through sensor gauntlet
2. Item location and dimensions identified

SEEK



1. System moves end effector to item location
2. End effector picks up item

SET



1. System moves item to destination on tray
2. End effector drops the item off

Results

To help perform the “pick and place” of ordered items into shippable containers, our team has designed, built, and demonstrated an advanced pick and place robotic system that can move objects from storage to shipment to end-customer more efficiently. The system has surpassed Amazon Robotics’ minimum criteria and will be continued both as a SCOPE project and will have a trial implementation at an Amazon Robotics facility.

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