Objective

1) To program a robotic arm to pick up and manipulate items and 2) help set up an experiment to measure variables related to human-robot teamwork.

Project Details

Human-machine trust is an emerging field, particularly for autonomous robots that have a capability to explore their environment, make decisions, and socially interact with a person. Trust is an important element to understand the relationship between humans and machines. Trust is involved in many different domains such as passengers in autonomous cars, manufacturing robots that work alongside people, and trust in social interactions with machines. This can be impacted by elements such as system faults, predictability, level of automation, confidence of the person using the machine and their propensity to trust.

This project is intended to explore how humans learn to trust machines, and under what factors do people experience higher or lower levels of machine trust. This project will involve working on the Panda (Franka Emika) arm. It involves setting up a co-collaborative task with a person and different technical aspects such as robotic grasping and manipulation, computer vision, and human-robot interaction. The project will involve conducting an experiment with a group of people to collect data on the robot task, and to evaluate its performance.

Prerequisites

Required: Excellent Python or C++ skills
Advantageous: ROS (~20 hours to learn if you are familiar with programming) and Ubuntu knowledge