

## Specialized Cartesian robot – Field sensing machine

Leverage TI Launchpad and 3D Printer Booster pack to build (and modify software for) a specialized Cartesian robot - field sensing machine

Field sensing machine - Electric field (EF) sensing is a method of proximity sensing that allows robots and computers to detect, evaluate and work with objects in their vicinity. Proximity sensing is the ability of a robot to tell when it is near an object, or when something is near it. This sense keeps a robot from running into things. It can also be used to measure the distance from a robot to some object.



Fig. 1. Photograph of Electric Field Pretouch manipulation system. The system includes a WAM arm and Barrett Hand. Each fingertip contains one of our custom Electric Field Sensing boards and 4 sensing electrodes. Another EF sensing board with one transmit electrode is built into the palm. The palm board also serves as a hub for aggregating sensor data from the fingertips. The palm also contains a camera, which was not used in the experiments reported in this paper. The googly eyes also were not used. A polar coordinate system used for mapping the region of where the grasping procedure succeeds is visible beneath an example object (a can).