

A decorative graphic on the left side of the slide consisting of two overlapping parallelograms. The front one is blue and the back one is a light green color. They are positioned diagonally, with the blue one in front of the green one.

User Input via Hand Detection

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Introduction of Problem

- Popularity of hand tracking technology
- Our initial idea
- Where we started



Technical Challenge

- Hand detection in general is tough due to variance
- The dataset used in training must make up for this variance
- Implementing the model on an embedded system reduces data allowance

Related Works

- Gesture and Hand Recognition quickly reaching the forefront of hands free computing
- Inspired by Google's gesture recognition model
- Use of embedded systems aligned with our original goal

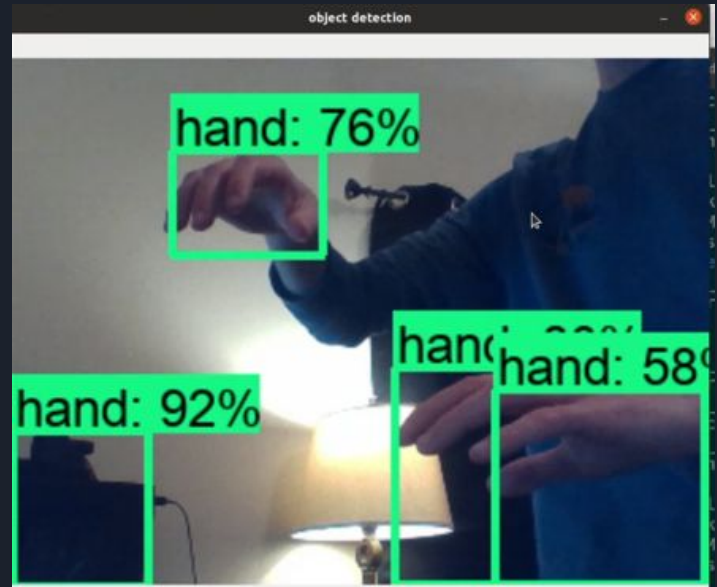
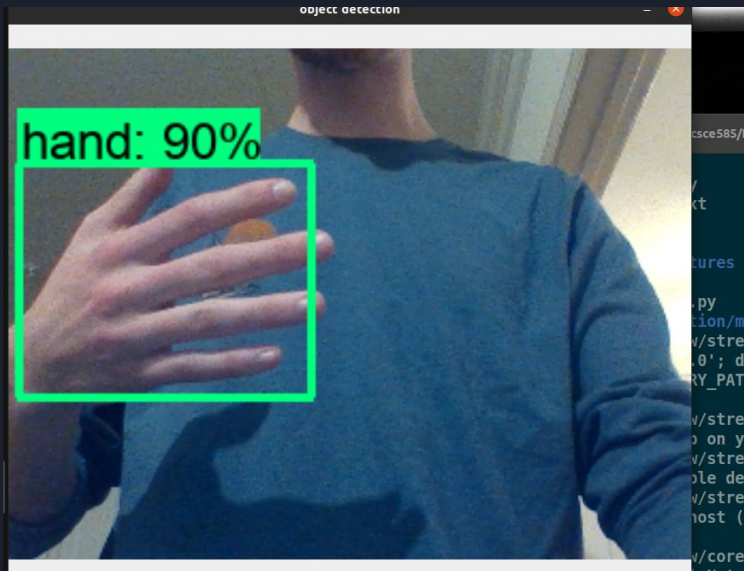




Our Approach

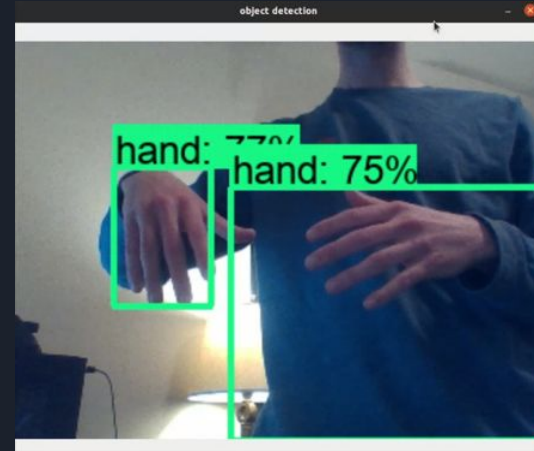
- Use of Google Colab, EgoHands dataset, and TensorFlow object detection model
- Took 400 frames at random and used 360 for training with the remaining 40 for testing
- Test our model with a python script utilizing openCV

First Results



Adjustments for Robustness

- More skin tones in data set
- Different angles of the hands
 - Multiple gestures
 - Flatter angles





Broader Impact

- We see our work being used in a variety of settings, from common household to doctors offices
- What we have made so far has its limitations
- Implementation on embedded system would increase this variety further