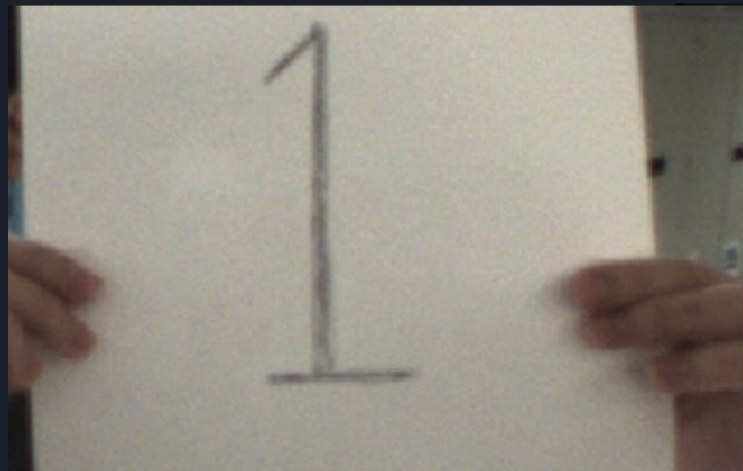


Baxter sort by Number

David Hwang, Shilpa deshpane, Chance
Foster

Project Idea

- With Baxter take in image of a digit (1-3)
- Classify digit with machine learning
- Use Baxter to sort blocks corresponding to digit



Project Learnings

- Get experience in using ROS
- Get more hands-on experience with Baxter
- Cooperation on building a project



Project Split

- Using Baxter's head camera
- Classifying digit from image
- Moving Baxters arms



Controlling Head Camera

- Upon Startup
 - Baxter can only operate 2 cameras at once
 - Default has head camera shut off
- Python Scripts
 - Shut off left-hand camera
 - Open head camera at specified resolution
 - Take photo and save image to root directory





Challenges

- Proper ROS setup
- Jumping from script to script

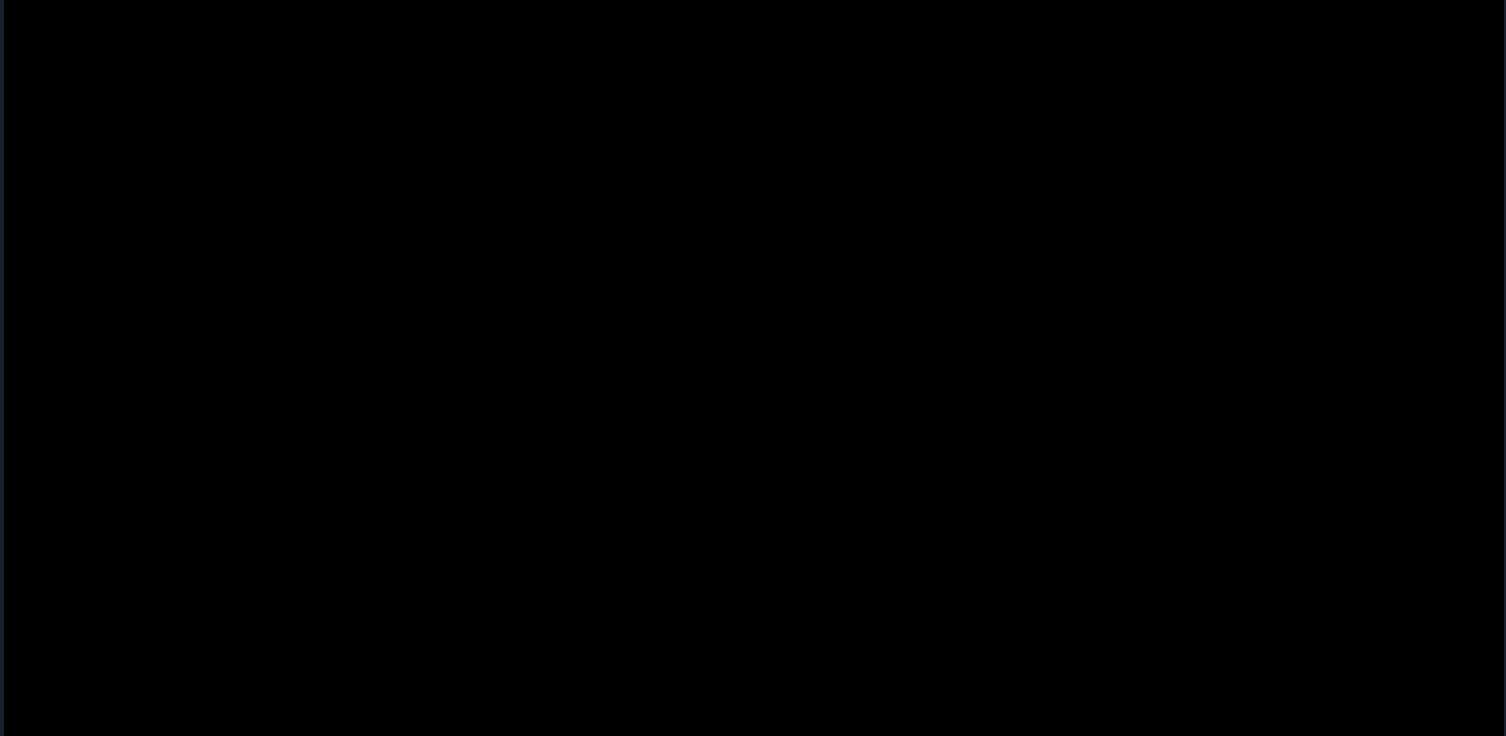
```
The following packages have unmet dependencies:
```

```
catkin : Depends: python-catkin-pkg but it is not going to be installed
```

```
E: Unable to correct problems, you have held broken packages.
```



Computer Vision

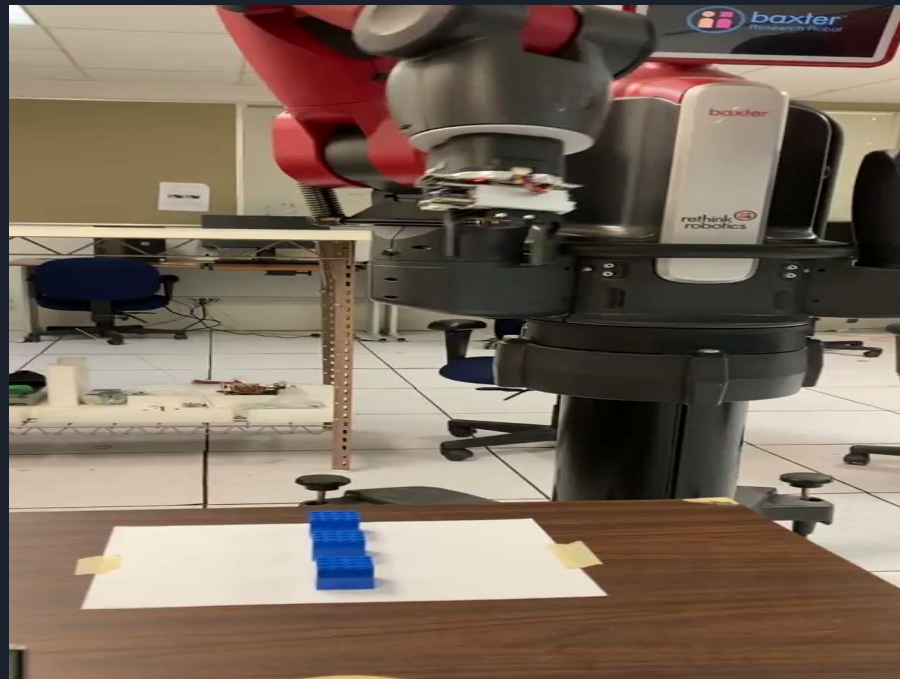


Sorting Blocks

- Manipulating Baxter
 1. Recording Joints
 2. Playback Joints



Sorting Blocks



Challenges

- Blocks slipping from Gripper
- Making sure that Baxter is aligned



Final Product

- Integration of all components, error handling, etc.
- With more time, one could incorporate dynamic block location, using fingers instead of written numbers, etc.
- Example application depicted here



<https://06edkm734f-flywheel.netdna-ssl.com/wp-content/uploads/2019/05/iStock-849023956.jpg>