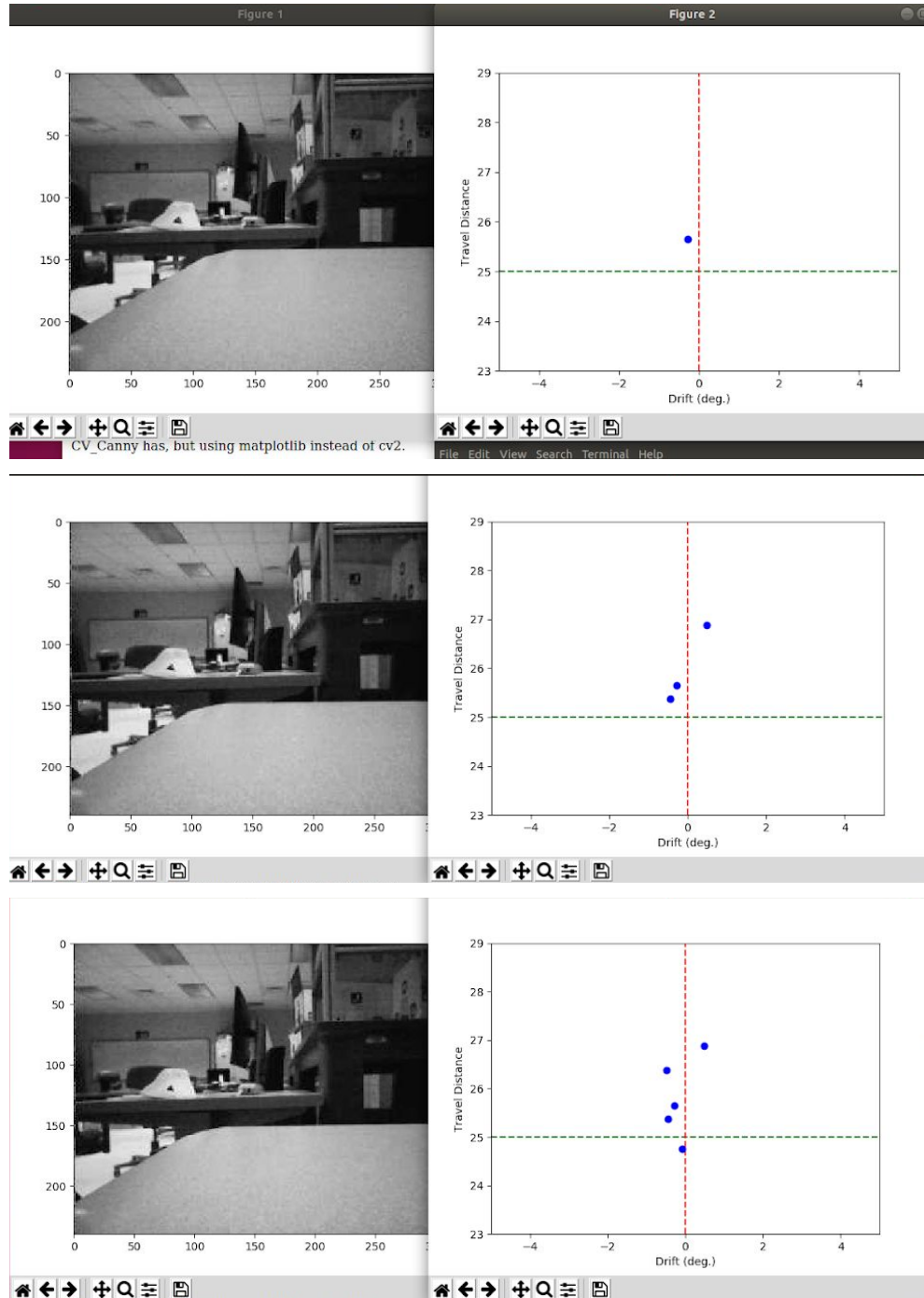


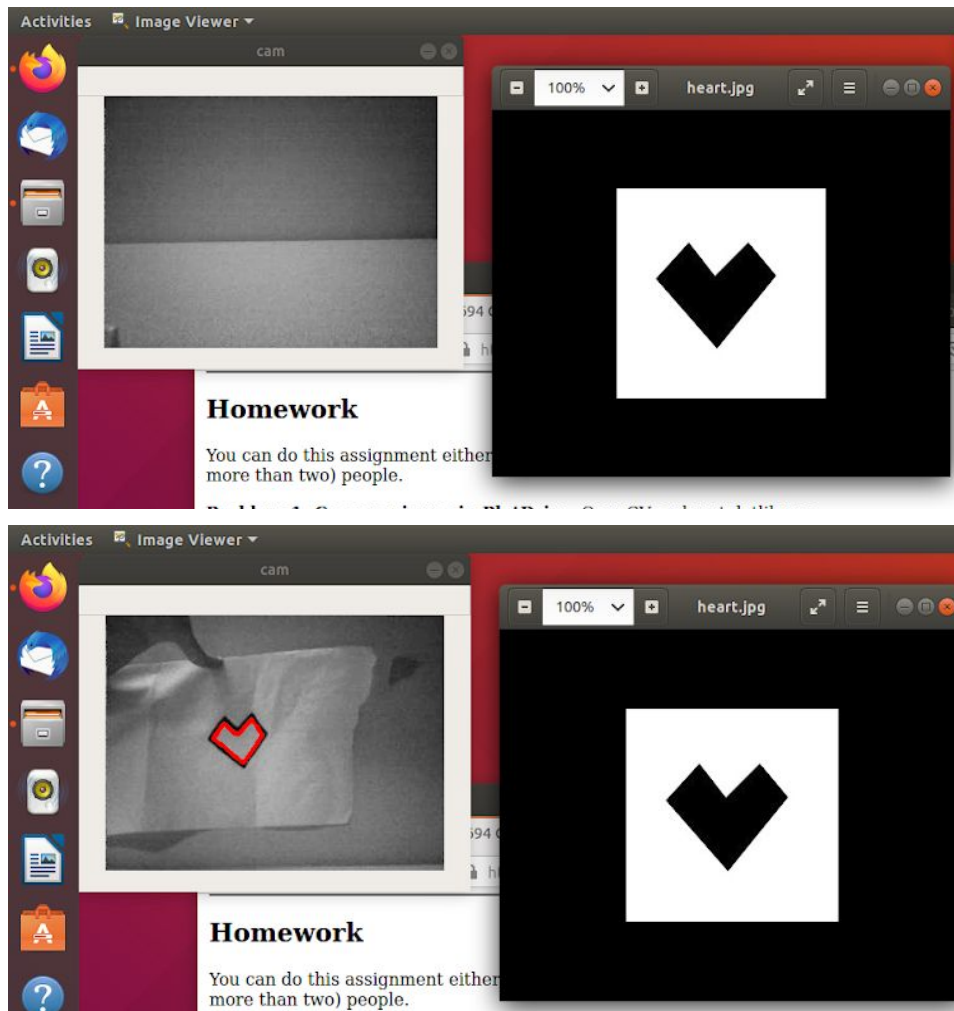
JD Parker
15-494
Lab 6 Homework

Problem 1: Plot Drive Camera Viewer



From these above images we can see that as the cozmo drives forward a bit, the camera updates its frame. (It is hard to tell with these images, but it does work). The camera displays every 10th frame alongside the drift and travel distance.

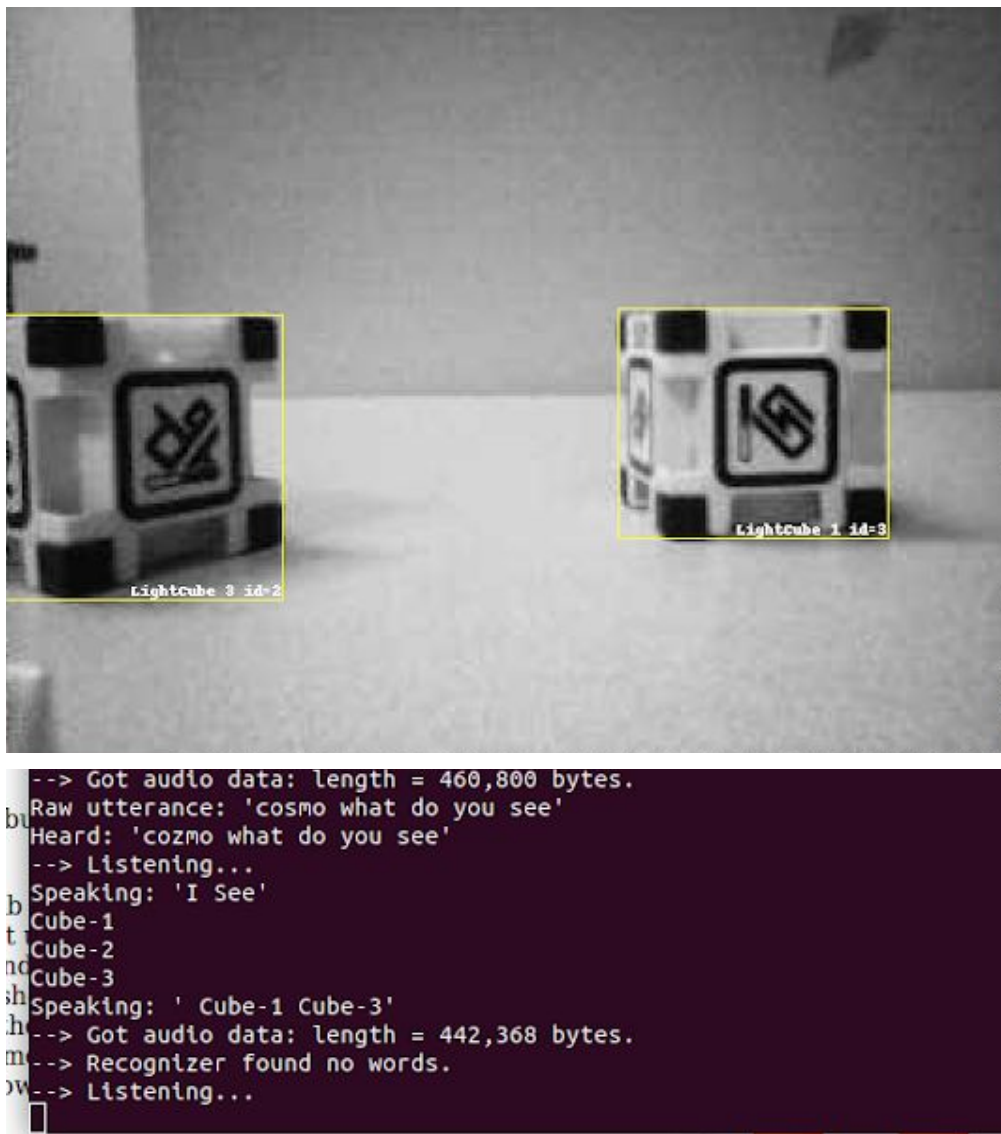
Problem 2: Shape Matching



The shape I used was a “heart” shape. If you look at the top image you can see that no contour is drawn, because there are no visible contours that are heart shaped. In the bottom image you can see that the program draws a contour around a similarly shaped heart. This demonstrates that the program works as intended.

Problem 3: Speech Recognition

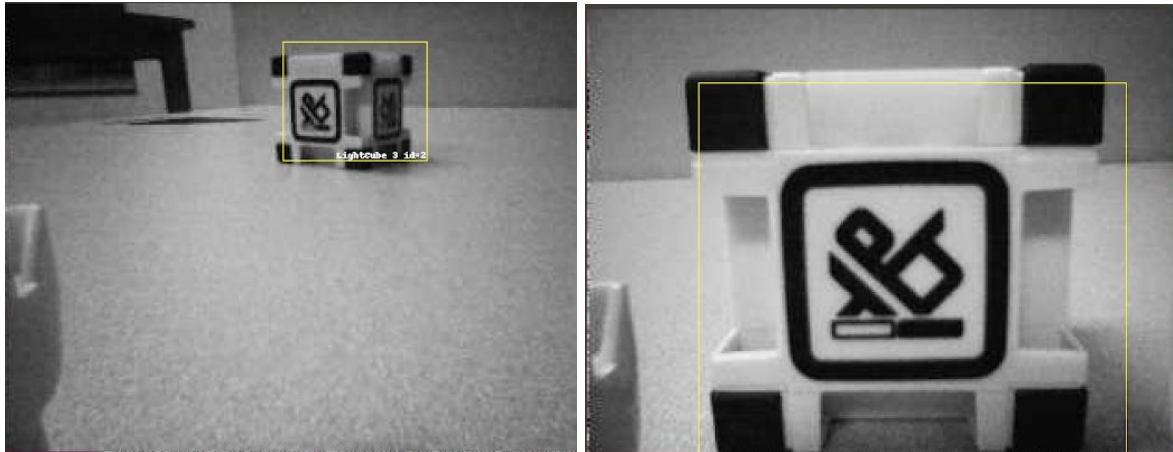
3a: "Cozmo what do you see?"



When I say "Cozmo what do you see?" the program responds and says the names of the cubes/walls/doorways, that it sees as pictured above. If it sees nothing it says "I see nothing".

3b: "Cozmo grab cube3"

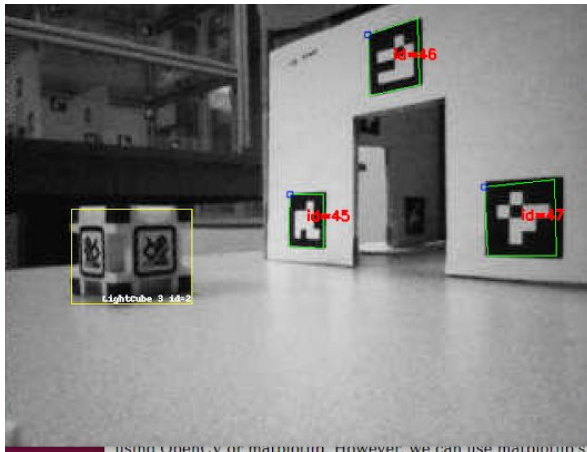
```
--> Listening...
--> Got audio data: length = 477,184 bytes.
Raw utterance: 'cosmo grab cube 3'
Heard: 'cozmo grab cube3'
--> Listening...
cube3
2020-02-28 19:40:06,754 cozmo.general INFO    Sending pickup object request for obj
ect=<LightCube object_id=2 battery=48% pose=<Pose <Position x: 136.83 y: 104.05 z: 1
7.36> <Quaternion q0: 1.00 q1: -0.00 q2: 0.00 q3: -0.09 (angle_z: <Angle -0.18 radia
ns (-10.17 degrees)>> origin_id=31> is_visible=True>
--> Got audio data: length = 241,664 bytes.
```



When I say, "Cozmo grab cube3," cozmo responds and picks up the cube and then sets it down as pictured above. If cozmo doesn't know where the cube is, it says "I don't know where it is." Cozmo checks if the cube has an origin id greater than -1, in order to check if it knows where the cube is.

3c: "Cozmo drive through doorway 46"

```
--> Listening...
--> Got audio data: length = 399,360 bytes.
Raw utterance: 'cosmo drive through doorway 46'
Heard: 'cozmo drive through doorway 46'
--> Listening...
PilotCheckStart: Start collides! StartCollides(<RRTNode (0.3,-4.1)@-11 deg>, <Rectangle (30.0,-0.0) 114.0x108.0 180.0 deg Charger>, 'Charger')
^^ TurnToGate: gate=(242.6, 11.9) offset=150.0 rtheta=-8.7 bearing=0.3 turn=9.0
--> Got audio data: length = 286,720 bytes.
--> Recognizer found no words.
--> Listening...
```



When I say "Cozmo drive through doorway 46," cozmo responds by running doorpass on the referenced door as pictured above. Cozmo keeps a global list of doors that it updates everytime it loops back to the dispatch (hearing) node. If cozmo has not seen the doorway you ask it to drive through, cozmo will say "Where is that door."