Sensor Mount

The main “sensor” being used in our pom pom collecting robot is the camera that will sort the pom poms. We mounted the camera at the end of the vacuum by removing the base and screwing it to a lego piece mounted to the effector. By directly attaching it to the sorting mechanism of the robot, the camera frame will be closer to the pom poms – this allows the camera to detect more of a specific color and therefore sort more effectively and efficiently. For this mount, we also considered mounting the camera into a lego boxlike structure to make it steadier and allow us to tilt the direction of the camera – thereby making it more mobile and stable.

Data

To gather data we coded our robot to drive straight towards a wall to test the consistency of the distance sensor. We mounted the ET sensor at the end of the robot and consistently drove it forwards and had it adjust to the specified distance sensor value; which in this case was within 340 and 360 or exactly equal to our goal – 350.

Data Evaluation

This data indicates that there is a relatively large margin of error in the distance sensor – up to half in inch range. This is quite concerning since we need the robot to be as precise as possible in stacking the PVC pipes for the “rocket” on stacking over the vertical poles. Based on this information, our team decided to come up with a “backup” test to ensure a more precise and accurate measure.

Modified System

Due to the large margin of error we found through the testing of the ET sensor, we decided to mount a touch sensor on the front of the robot at the distance that that the ET sensor was set to. That way, the contact of a solid surface against the touch sensor would be more accurate than the distance sensor.