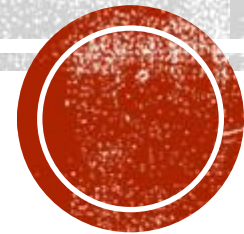


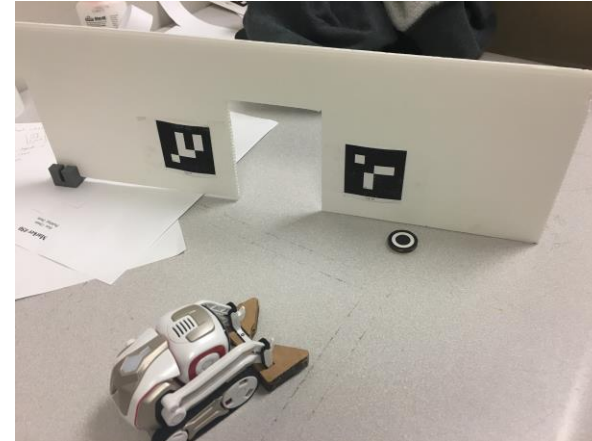
MANIPULATION OF CHIPS AND BALLS

Jack Lance



OBJECTIVES

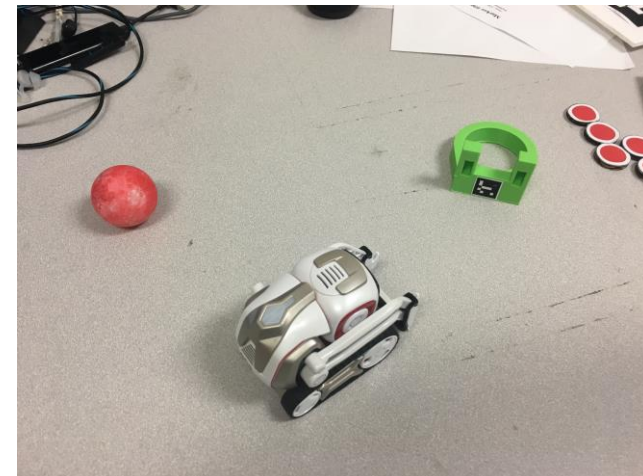
- Get a chip away from a wall



- Separate an chip from a pile



- Capture a ball with a loop and move it around
 - Create a ball loop that Cozmo can pick up with his lift



MOST CHALLENGING PARTS

- Determining where the chips/balls are
 - Angle – calculated slopes based on calibration angles
 - Wall – extrapolated angle of chip and angle of wall
 - Pile of chips and Ball – Used focal length to determine length



MOST INTERESTING ASPECT

- My favorite part of this project was the ball holder
 - Mechanical Design
 - The code to pick it up can be used for any holder with an aruco tag
 - Very modular
 - Could be used for chip manipulator, other objects



REMAINING WORK

- Made it a library
 - Can be imported into other projects who want to use parts of what I've done
 - Improvement to the FSM would be an `import_fsm` function so that you don't have to `gen_fsm` separately
- Create other tool attachments
- Include other colors for object detection
- Cozmo Closet in dreamhouse where different tools are kept

