

CPE 470: Auto Mobile Robotics

Team 4

Ball Sorting Contest

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Overview

This week, the project at hand was for our team to build a robot that can catch a ball and drop this ball in the side that matches the color of the ball! The robots functionalities were guided according to the compass sensor, reach at the left side of the table, and get a random ball. If the ball was red the robot drop the ball in this side and if the ball was blue, the robot went to the right side guided by the compass sensor and drop the blue ball.

Problems/Solutions

The first issue we had with this project was to build the robot and find the best way to catch the balls. We think that this contest was the most difficult to build, we spent several hours trying to build the claw on the robot illustrated in the pictures below. After it was constructed, we started to program the movement of the robot and got another problem because our compass sensor was not calibrated.

The next problem was having the robot finding another ball after its initial find. We could just leave the code as it is and see if the robot will find it on its own, that did not work too well. We then decided to program a “reset” function in it. After it find the ball and drops it over the ledge, it would then back up, drop its claw and angle itself towards the red side again, effectively resetting its position and gearing itself to go again.

The last problem that the robot faces was obstacle avoidance. The only avoidance it had was a bump sensor in the front. The robot failed its competition because a ball got lodged in its front tire. If the robot had better obstacle avoidance it would have been able to see the ball and move out of the way.

Conclusion

So far throughout this course, this was our worst competition. Every other competition up to this one we placed in first place or second place. This competition we were disqualified because of the failed obstacle avoidance functionality in the robot. Otherwise the code worked very well. It was able to find a ball, sense its colors and go to the corresponding side to drop it off its ledge. The next competition is the final competition, which is soccer playing, and our team is going to come out no top.



