Lab 6
Ball Sorting Contest

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Robot Design

Our robot used a unique hardware strategy of collecting blue balls in a cage-like structure beneath the robot in order to limit the interaction with the opposite side of the arena to one trip in each direction. A scoop was used to either push a red ball off of the edge or allow a blue ball into the container below. A color sensor would detect the color of the ball and select the appropriate behavior. A compass sensor was used to align the robot with a canonical direction assigned to the robot's initial pose.

Algorithm

The robot initially drives to the side containing the balls and aligns itself at the left side of the table. It searches a swath directly in front of the robot and deals with any detected balls. Upon reaching the wall, it backs up and edges to the right before searching another slightly overlapping swath. When it reaches the time limit, it selects all of the balls, or it reaches the right wall, it delivers the blue balls to the opposite side of the table.

Contest Results

Our robot performed the best in the classroom's competition. It successfully sorted 7 correctly with 1 misclassification. This was significantly better than the results of other competitors. It also performed at this level well under the time limit.