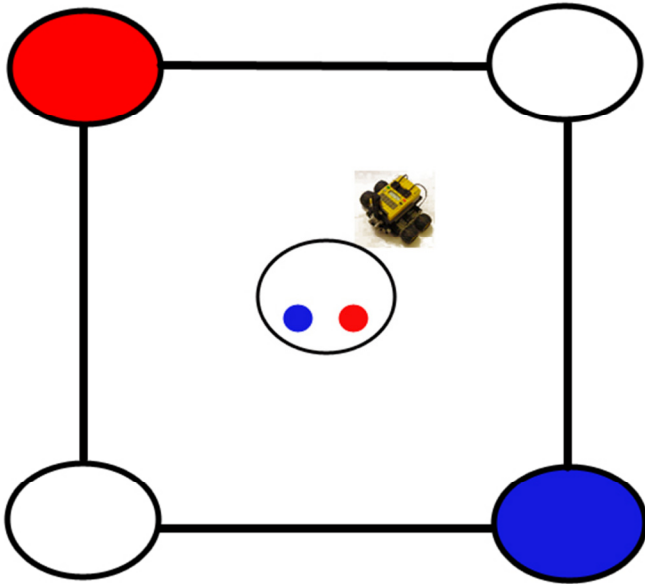
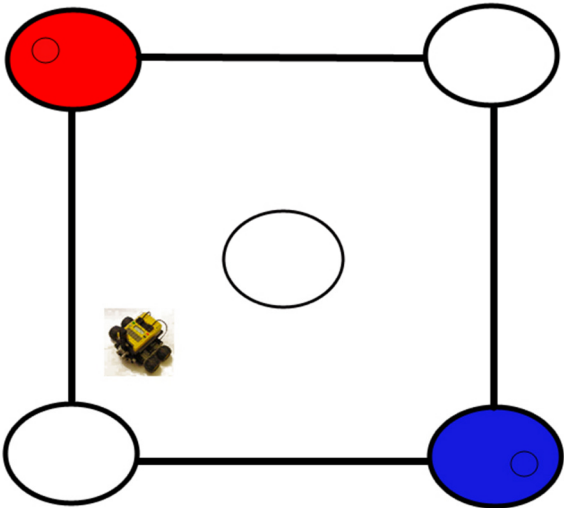


CS 245 - Team Project

Advanced Robot Programming and Manipulation

This laboratory experience will introduce us to more advanced robot programming and manipulation techniques.

Lab Objectives:	<p>The purposes of this lab are :</p> <ul style="list-style-type: none">(1) to utilize different types of multiple sensors(2) to utilize knowledge about the environment(3) to use robots for manipulation and recognition of real-world objects
Description:	<p style="text-align: center;"><u>"Deliver the Objects"</u></p> <p>There is a square which contains a circle in the middle, which in turn contains 2 objects of your choice. There is one object of each of the two colors that you may choose. Each of the four corners of the square surface has a circle where the objects need to be delivered. Two of the opposite corners have different colors, each of which corresponds to one of the two colors of your objects.</p> <p>Your task is to program the robot so that it moves all objects from the middle circle into one of the two circles with color, where objects of a specific color must be in the circle of that same color. The objects must be moved one at the time. There will be a time limit of 2 minutes for a successful completion of this task. Your robot must also know when it is done. Initially, your robot is inside the square, facing the circle in the middle of the square. The objects, once moved, must remain within the boundaries of the corner circles. The following figure is the initial configuration for the task:</p> <div style="text-align: center;"></div> <p>You will have to make your own squared surfaces that suite your needs. The square should be approximately 3 - 5 feet wide, drawn in black, and about an inch in width. The surface on which the line is drawn should be bright (white) and much brighter than the lines itself. The line representing the borders of the outside areas, and the circles in the corners, will also be drawn in black, and about one inch in width. The size of the corner circle areas is to be determined, but it should be large enough to hold at least 2 objects of your choice. Feel free to choose any two colors for your objects and for the two opposite corners. Please make sure that the light sensor readings for the two colors differ significantly, to make the color</p>

	<p>recognition task easier.</p> <p>The following figure is an example of a configuration upon a successful completion of the task:</p>  <p>Note that the objects must be placed in corners corresponding to the objects' colors.</p>
Procedure:	<p>Each team member will be responsible for his/her own subtask within the laboratory exercise. Each team member will make a single 'my black', which will later be combined with other team members' my blacks into a complete program.</p> <p>Start by thinking about dividing the task into sub-tasks and working on subtasks first. These sub-tasks, in turn, may be combined into a complete program, once they are tested individually. Test your programs by downloading them into your robots and observing their performance.</p>
Lab Report:	<p>This time, each team will prepare a short, 5-10 minute presentation of their design process, challenges, and solutions to the challenges. Each team will then demonstrate their lab project to the whole class. In addition, turn in your programs electronically via email (per team).</p>
Grading:	<p>The grade for this lab will be determined according to the following:</p> <ul style="list-style-type: none">- Successful completion of the task above (60%)- Team presentation and demonstration (20%)- Team member evaluations (20%)
Due Date:	<ul style="list-style-type: none">- Demonstrations and evaluations of your work for this lab will take place on the last class session of this semester