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COMP.4500

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**Final Project Proposal**

*The problem we are trying to solve:*

Objects scattered across a floor that are light green need to be put away before somebody trips and falls on those objects. A stretch goal for this project would be closing a door that a negligent student left open.

*What our project will do:*

Our robot will use its camera to look for light green objects scattered around a room, approach an individual object, lift it up in its shovel, then search for the designated bin for it to then approach and dump the ball in. This process should repeat until it cannot find any more balls to pick up.

For the stretch goal, the robot will lift its shovel out of the way, search for a QR code, position itself in front of the QR code posted in the front of the door, then ram into the QR code at full speed for it to close.

*How we plan to accomplish it:*

Using one feature of the Wallaby’s camera API (the color tracking), we will have one color tracking channel devoted to searching for green balls, then once a green ball is in the shovel, another channel will be used to search for a yellow bin, and once we have gotten to the bin the shovel will be lowered. The shovel will be comprised of 2 stepper servos, sticks to attach a shovel to the servo and paper to make the shovel itself.

For the stretch goal, the QR code will be printed and attached to the closet door of the lab. We will assume the door is always open, and that nobody is in the room to risk opening the door on the robot. We could use the bumper sensor to tell if we are still hitting the door or not once the QR code comes too close into view

*Additional materials needed:*

* 2 continuous servos
* 1 camera
* 1 Wallaby
* 4 wheels
* Lots of lego pieces
* 2 stepper motors
* 2 popsicle sticks
* Multiple green balls
* Yellow bin

*Timeline:*

* April 3: Submit proposal
* April 9: Base of robot + robot shovel is built
* April 24: Robot is putting balls into the bin
* May 3: Finishing touches
* May 8: Submit project reports