

91.451, Robotics II
Spring 2003
Prof. Yanco

Final Project: Pick Up the Trash

Out: Tuesday, 15 April 2003

<u>Due:</u> Thursday, 24 April 2003	2-3 page description of your proposed approach
Thursday, 1 May 2003	Demonstration of traveling to trash and to trash can
Thursday, 8 May 2003	Full demonstration in class, with 5 minute talk on your approach

For the final project, you will program the robot to find trash, pick it up, and move it to a collection location. Trash will be brightly colored (for example, a red Coke can). The trash collection location (trash can, but cut down to allow the robot to place items into it) will be a blue trash can. The trash and trash can will be put in the hallway outside the lab for the robot's run.

You may work with in teams (up to three people) on this project. To make it fair, teams must be able to find and move two types of trash (different colors) to two different trash cans (one for recycling and the other for trash). Individuals will move one type of trash to one type of trash can.

In lab on Thursday (17 April), we will start to use the camera and gripper on the robot, both of which you will need to complete this project.

You may choose the type of control that you wish to use on the robot: direct control, behavior based, fuzzy, etc. This should be documented in your proposal due on Thursday, 24 April.

There is one checkpoint during the project period. By Thursday, 1 May, you must demonstrate that you can navigate to an item of trash, then to the trash can. You do not need to pick up or move the trash at this checkpoint.

During the final project demonstration, while the robot is running, you should talk about what the robot is doing and the approach you took, for at least 5 minutes. The robot that cleans up the trash in the quickest amount of time will receive an award for its designer.

Attached is an article written by a team that entered the 1994 AAAI Pick Up the Trash contest. Note that almost a decade has passed since this initial competition when you are reading about the technology used.