

Challenge Six: *Mobot/Security Patrol*

ROBOTIC AUTONOMY
Summer 2002

Your talents as a robonaut have developed to such a degree that you are ready for advanced challenges!

Mobot (30 points)

This challenge is the CMU West version of the famous Mobot contest back in Pittsburgh. A single-track white line will trace out an outdoor race track. Your job is to craft a superior line following solution so that your TrikeBot travels the race course in the best possible time. We will grade your robot by how it does in going around the track against the time of competing teams' TrikeBots.

Security Patrol (30 points)

Your robot must remain stationary for this challenge at any location you choose within two meters of the front door to Building 17. Your goal is to put your TrikeBots on security patrol to detect the infamous intruder, Orange Illah. Sometime during your watch, the intruder will sneak by your robot. He will move quickly as he starts far away from your security station, gradually becoming more and more brave, until he finally ventures right up to your robot. As he comes near, he will pick up objects on the floor worth various points. Your job is to sound the alarm bells as early as possible if you detect this intruder, thus protecting the remaining points that Orange Illah has not stolen from you.

False alarms will cause point penalties, so be careful not to sound an alarm if the intruder is not there. Please note that although the robot's body must remain stationary, you can of course move the head at will. *Extra credit will be awarded if your robot takes a picture of Orange Illah in the act of sneaking.*

Exhibition and Writeup

To get full credit for last Friday's contest, if you did not present an exhibit, you must do one on Wednesday. You must also present an exhibit document if you did not have one ready last Friday.

Open Source (20 points)

You will be open-source releasing your choice between your team's line racing program or smart security patrol. Your writeup needs to explain to people how your program works. As with previous weeks, create a new folder (Week 6) and put in that folder your UserWindow.java and UserThread.java together with the following written sections:

- Summary: what this program does
- Directions: how to run it
- Performance: how you have tested it and how well it did
- Limitations: how and what causes it to perform poorly
- Suggested Improvements: what you would do next to improve the program

To support your description, we will ask you to help videotape a ten-second video as well as two pictures showing it in normal circumstances. We will put these pictures and video in your team folder.

Web Documentation (20 points)

The items to submit for your web site this week are:

- 1) Describe the reason you chose to open source one program over another. For the code you did not open source, explain your challenge solution.
- 2) Make an overhead sketch of your security station. Indicate areas of coverage and how your trikebots reacted to the intruder.