**Rescue Robot Activity**

The rescue robot assignment is based on the second level of RoboCupJunior, an international competition. More information about RoboCupJunior is available at http://rcj.robocup.org. This robot simulates robots sent to rescue people during natural disasters. It must find “victims” along the path through each “room” and avoid obstacles. The goal is to program a robot that uses sensors to respond to different stimuli.

**Task:**

Build a robot that follows a black line on a white background, counts green or metallic “people” and avoids obstacles.

**Requirements:**

* The robot must follow the black line and attempt to complete the course through the entire arena. The robot will begin at the starting location in the doorway of the first “room”.
* The robot should stop and flash a light for at least two seconds to indicate it has found a victim. For extra credit, count the number of victims and display the count.
* The robot should be able to avoid items of debris blocking the black line.
* If a robot has been stuck or lost the black line for more than 20 seconds, the teacher may pick it up and put it back onto the black line a little beyond where it ran into problems. The 20-second rule allows it to try to find its way back to the line without intervention. A team may decide to quit if the robot is faulty or repeatedly loses the line.
* Robots must be controlled autonomously except for being started by a member of the team.
* The robot will have 10 minutes to complete the course and identify all victims.
* Each team must print out its program and hand it in at the same time that they compete.
* Fair play is an important part of the RoboCup challenge. Teams are expected to help other teams as needed and not deliberately interfere with or damage other teams’ work. All students are expected to respectfully watch all other teams compete.

**Process:**

6. Brainstorm ideas about how your robot should work: what sensors will you need? What motors and lights? What programming constructs will you need?

7. Start building your robot.

8. Build a program that controls the robot

9. Test frequently and revise the program. Make sure it correctly detects victims and that it can follow the line. Check if it can navigate gaps.

You will have three and a half class periods to build and program the robot; then you will present it in class.