ClareBot Arena Wall-following Robot – Mentor Notes

Purpose of this session:

This session can be used as a follow-up to the “Bang and Bump Challenge” (Challenge 52). The Lego additions allow ClareBot to be used as a simple arena wall following robot that can run around the inside of an arena without touching the walls.

The good things:

This robot is unusual in that it uses only one fixed sensor to follow the interior walls of an arena. Most wall following robots need two or more sensors to be able to follow a wall adequately, so this is a good introductory robot to be used as a first wall follower. Having only one fixed sensor has the additional advantage that it makes the robot easier for a non-expert student to be able to program it and obtain a good result.

The bad things:

When acting as a wall follower, this robot is restricted to following left turns around the interior walls of an arena, or very gentle right-hand turns. As you will see from the video at the bottom of the webpage, the robot cannot handle sharp 180° right turns. This means that, while it this robot can act as a wall follower, it will not be able to be used as a maze-solving robot; (generally two or more sensors are needed to enable the robot to solve a maze). You will also notice that the suggested programming is not symmetric when moving towards and away from the wall. This asymmetric programming was needed to stop the robot slowly moving towards, and finally jamming against, the wall it was following.

Summary:

Like most of the robots in the DrGraeme website, these fairly detailed instructions are designed to help students get a start with a particular type of robot. In our experience, once the students get the confidence to be able to see a good result, they will have the confidence to fiddle and further explore changes to the robots themselves. We could tell you how to make a “perfect” wall follower, but that would take away the opportunity for the students to change and improve the wall follower themselves, and thus gain confidence in their own abilities. In our experience, kids can teach themselves so much, if they are given the time and confidence. We hope this session will be another one which will give the kids that confidence boosting start, and assist them to try a new form of robot that they can improve upon themselves with their own enthusiastic efforts.