Report Notes

Define and introduce problem, with background research, like roombas etc.

Configuration space – i.e wall to left and infront. No walls detected etc. use Truth Table

Psuedo Code

Code

Run and observe. Why is it oscillating? What is the behavior? Observe and explain why, change variables observe again.

Initial run showed that the robot would often crash into the wall it was following, take a large turning radius when going around corners. Added sensor values to detect if it was to close to wall, it now corrects itself and stays a good distance away from wall, however it will periodically weave in and out of the wall, it finds it difficult to keep the perfect distance.

Run Left-Wall 1 –

Time 8.02

Observation – Initially follows wall at good distance then once it reaches and junction and turns left to find the new wall it crashes into the wall, then Hugs the wall and rides it all around the maze, takes large turning radius around corners.

Run Left-Wall 2 –

Time 8.03

Observation - Same as run 1

Run Left Wall 3 –

Time 8.01

Observation - Same as run 1

Run Left Wall 4 –

Time 8.01

Observation – immediately starts hugging wall because scenario includes front wall

Run Left Wall 5 –

Time 8mins

Observation - Same as run 1

Run No Wall 1

Time 8.01

Observation – Immediately starts turning left, wide turn and quickly finds a wall and begins hugging it

Run 2 No Wall

Time 8.04

Observation - Same as run 1

Run 3 No Wall

Time 8.05

Observation - Same as run1

Run 4 No Wall

Time 8.19

Observation – it turns left immediately, essentially completing a 180 turn, encounters a right wall scenario due to this and turns again to make it a left wall scenario.

Run 5 No wall

Time 8.01

Observation - Same as run1

Run 1 Right Wall

Time 8.08

Observation – Drove forward until it met a front wall then turned right to make it a left-hand wall following again

Run 2 Right Wall

Time 8.08

Observation - Same as run 1

Run 3 Right Wall

Time 16.14

Observation – It followed the right wall then came up to a turn, then adjusted to left wall following, due to the turn it caused the bot to miss part of the maze so it had to do 2 laps.

Run 4 Right Wall

Time 8.29

Observation – Same as Run 1

Run5 Right Wall

Time 8.18

Observation - Same as run 1

Final observation, what did you finalize and stick with. How would you change it if you were to do it again? Different controller?

NEW ALGORITHM

Run 1 left hand –

Time 6.47

Observation – The robot now stays away from the wall and corrects itself if it is getting too close. It never touches the wall on its lap of the maze. It jitters slightly when correcting its self from being too close to the wall.

Run 2 left hand

Time – 6.48

Observation – same as run 1

Run 3 left hand

Time – 6.45

Observation – same as run 1

Run 4 left hand

Time – 6.47

Observation – same as run 1

Run 5 left hand

Time – 6.49

Observation – same as run 1

Run 1 no wall –

Time – 7.06

Observation – It began turning left, lower turning radius than before due to the reduced speed on that condition, it found a wall on its right then turned on the spot to make it a left wall to continue with left handed following.

Run 2 – no wall –

Time – FAIL Stopped at 19 minutes

Observation – The robot fails to find a wall within decent time with the new algorithm, likely due to the smaller turning radius on the turn left condition and also the fact that there is no left wall close to the robot.

Run 3 – no wall –

Time 7.03

Observation – it quickly finds the wall, introduces a right wall scenario, it corrects to left wall and continues to left hand following.

Run 4 – no wall –

Time – 8mins

Observation – It spins in circles until it gets close enough to the wall, activates right wall scenario then corrects to left wall to continue to left hand following

Run 5 – no wall –

Time 7.07

Observation – It turns left and quickly finds a wall, activates right wall scenario, then corrects to the left wall to continue to left hand following.

Run 1 – right wall

Time – 7.07

Observation – it turns in place 180 degrees to make the right wall and left wall and continues with left hand following

Run 2 – right wall

Time – 7.03

Observation – same as run 1

Run 3 – right wall

Time – 7.02

Observation – same as run 1

Run 4 – right wall

Time – 7.02

Observation – same as run 1

Run 5 – right wall

Time – 7.07

Observation – same as run 1