



Autonomous Vehicle Assessable Track

ENGG1500
Electrical Engineering
Mechatronics Engineering
Computer Systems Engineering

Semester 1 2020

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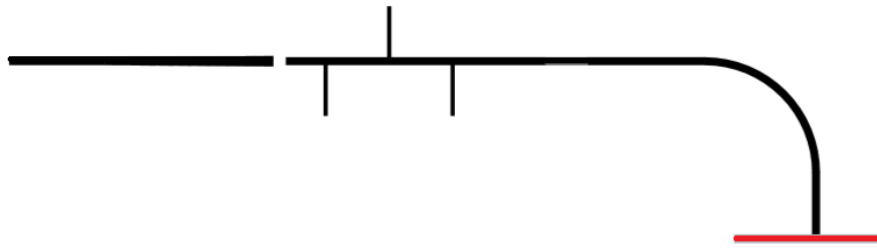


Figure 1: Qualifying track with wall (red line) and 10mm line-gap

1 Introduction

This document outlines the assessment format and schedule for your workshop and reveals the track you will be assessed on. **Read this entire document very carefully.**

By receiving this document you are issued two milestones by the client. These are titled: *Qualifying Track* and *Track Compliance* respectively.

Upon completion, *Track Compliance* will grant you the ability to sit your final project demonstration, while completion of the *Qualifying Track* milestone will grant you an additional attempt on the track (from two total attempts, to three).

2 Assessment

2.1 Qualifying Track

You will demonstrate your robot successfully completing the qualifying tack, shown in 1, to your workshop leader. To do this, you need to construct the track shown below and record a video of your robot autonomously navigating. The provided track document has all components required (black electrical tape also works). The robot must enter from the left most side and remain stationary about 100mm from the wall. This milestone will not be considered complete until your vehicle can do so without colliding with the wall or leaving the track.

Hint

You can upload a video of your magnificent qualification run to YouTube and set the privacy to *link only*^a.

^aOr public, if you are feeling particularly proud.

2.2 Track Compliance

You are required to demonstrate your built track to a tutor up until the day before the assessment. If no tutor is available, your milestone cannot be signed off and you cannot sit the demonstration. **It is strongly recommended you build this track and have the milestone signed as quickly as possible.**

You need to either demonstrate via webcam, images or video that the final track is together. It is also ideal if the track is made from the kit supplied by the Print Shop. To reach compliance, the

tutor will be checking any avenues of undue advantage, such as objects outside the track being used for navigation such as lounges, have a chat to them, they will let you know if you need to change anything.

3 Team Presentation

Your group will be required to give a pitch, where you will speak for 120 seconds before your first attempt. After this, any member of your team can be called upon to answer specific questions from your workshop leader(s). You should be prepared to answer any and all questions about the project, even the bits you didn't work on; simply, "I didn't work on that", is not an acceptable response.

At least a higher level conceptual explanation is expected before handing over to the group member that does know the more technical details of the question asked. Your presentation and responses should be a convincing argument why you completed the project the way you did and why, if this were a commercial bid, yours is the best.

4 Assessment Track

The project will be demonstrated during your workshop time in week 12. You will be assessed on the track shown in Figure 2. You will have the first five minutes of your workshop to calibrate your sensors, though you are not permitted to touch the track in this time ¹.

From this point your groups will be called in numerical order to present verbally for up to 120 seconds, followed by a series of random questions. After this presentation, when instructed by the tutor, your nominated team member will place the robot on the track in the start zone and turn it on. The robot is to have no human interaction from this point in time.

After this time your team will have the further opportunity to tweak the project before a second and third attempt.

¹It's never too late!

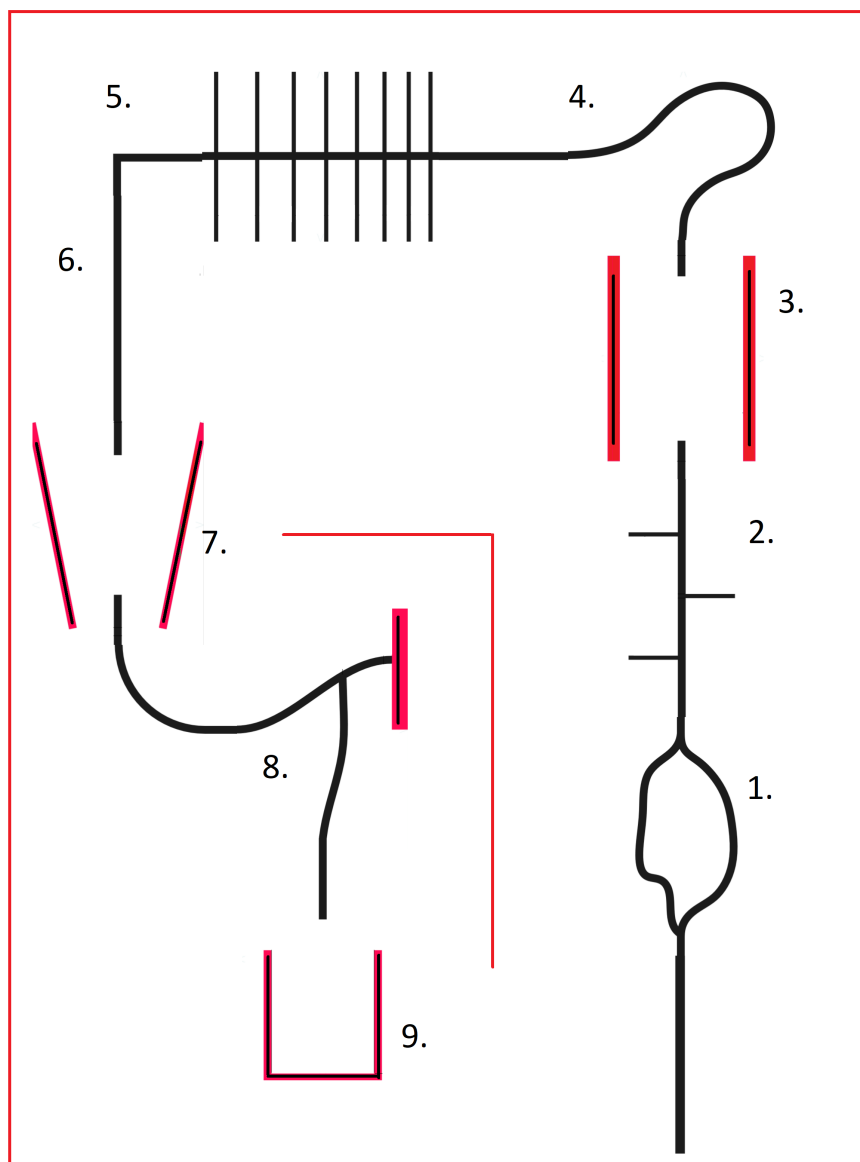


Figure 2: Final Track. Thick red lines with an internal black line are physical walls. (think cardboard, ect.). Thin red lines are no-cross zones.

Track Obstacle	Name	Maximum Score
1	Curved Split	3
2	Distraction Lines	6
3	Hallway	12
4	Curved Line	14
5	Rumble Strip	15
6	90 deg Turn	16
7	Converging Hallway	17
8	Dead-End and Curved Turn	18
9	Garage	19

5 Marking Criteria

Your highest mark will be taken from your two (or three) attempts (out of 20) Place your bot at the starting position, switch it on and go!

The thin red-lines are no-go zones. If you cross this line your run will stop, and you will be marked up to where you have gotten to.

5.1 Bonus Marks

You have the capability of earning bonus marks on your third attempt.

1. Smoothness: A mark will be given (or taken away) based on how smooth your robot performs. Reducing jerky² behaviour is the goal.
2. Back Track Two marks will be awarded if no modifications to your code are required to have your robot exit the garage and navigate the track to the starting position.
3. Clarification Bonus marks are added to your highest navigation score, you can achieve higher than 100 percent.

²[Wikipedia: Jerk Snap Crackle Pop](#)