

Workshop 5: Consolidation - 'Self Driving Car'

1 Getting Started

Make sure you have everything you need to complete this lab. To get started you will need the following:

- a LEGO Mindstorms EV3 robot
- a computer with LEGO Mindstorms EV3 software application installed
- a USB cable that connects the robot to your computer
- tape
- LEGO blocks, obstacles
- All the sensors that you can think of

2 'Self Driving Car'



In this exercise you need to use everything that you have learnt so far. Build a self driving car, and manage to do the following:

1. Using the **Light Sensor**, the self driving car should follow the path created with the tape.
2. The car should avoid any obstacles using the **Ultrasonic Sensor**, if something getting closer it should stop until the road is clear. Also think about **crossroads!**
3. If somehow the car **hit** an obstacle or another car, it should stop, correct it's error and goes back on track.
4. You might want to use the **Accelerometer Sensor** or the **Gyroscope Sensor** to get back your car on track if it get lost.

HINT: If you have time, you can consider moving the Ultrasonic Sensor in 180 degrees while the car moves, like the Google Self Driving Car. **Be careful with the wires!**

3 Competition!

Once you have finished your Self Driving Car and managed to do all the exercises, let's compete your car against your schoolmates' car. **The aim is to go through the given path as soon as possible by avoiding the obstacles and other cars!**

Rules:

- Each group have **100 points** at the beginning.
- The group with the **maximum point** will win the competition!
- Every time you hit an obstacle **-15 points**.
- If your robot goes off the path **-10 points**, but if it finds the way back you will get **+15 points!**
- If you have hit more than 5 obstacles, **-10 points**.

GOOD LUCK!