**Line Follower Robot**

A Line Following Robot is an autonomous robot which is able to follow either a black or white line that is drawn on the surface consisting of a contrasting colour. It is designed to move automatically and follow the made plot line. The robot uses several sensors to identify the line thus assisting the robot to stay on the track. The Arduino Uno interface is used to perform and implement algorithms to control the speed of the motors, steering the robot to travel along the line smoothly. This project aims to implement the algorithm and control the movement of the robot by proper tuning of the control parameters and thus achieve better performance.  It can be used industrial automated equipment carriers, small household applications, tour guides in museums and other similar applications, etc.

**Maze Solver Robot, Using Artificial Intelligence with Arduino**

Once you have a robot with line following capabilities, the next natural step is to give him some degree of intelligence. So, our dear Robot will try now finding how to escape from a "labyrinth" on a shortest and fastest way. For starting, what is the difference between Maze and Labyrinth? In the English-speaking world it is often considered that to be qualified as a maze, a design must have choices in the pathway. Popular consensus also indicates that labyrinths have one pathway that leads inexorably from the entrance to the goal, albeit often by the most complex and winding of routes.

Returning to our project, it will be split in two parts (or "passes"):

1. (First Pass): The robot finds its way out from a "non-known perfect maze". Does not matter where you put it inside the maze, it will find a "solution". In the first time that the robot explores the maze, of course it will waste a lot of time "thinking" about what to do at any intersection. Testing the numerous possibilities, it will take several wrong paths and dead ends, what force him to run longer paths and perform unnecessary "U-Turns". During this "1st Pass", the robot will be accumulating experiences, "taking notes" about the different intersections and eliminating the bad branches.
2. (Second Pass): Once the robot found a possible maze solution, it should optimize its solution finding the "shortest path from start to finish". In its "2nd Pass", the robot goes straight and quickly to the end without any mistake or doubt.