THE CONSTRUCT

COURSE CATALOG

ROS eLearning Solutions Built for Campus
Learn TurtleBot 3 and ROS

COURSE OF PRODUCT

Learn how to work with a TurtleBot3 robot

Within this Course, you are going to learn how you can start working with a TurtleBot3 robot using its both versions, Burger and Waffle.

Learning Objectives

• Basic Usage and control of the TurtleBot 3 robot.
• How to perform Navigation with TurtleBot 3.
• Follow a line with TurtleBot 3.
• Object Recognition with TurtleBot 3
• Motion Planning in Moveit with TurtleBot 3

PROJECT TASKS

• **Navigation with TurtleBot 3**: The first thing you will need for a robot that patrols is the ability to move around without crashing into everything, for this you will learn:
  - How to create a map of an environment
  - Localize the robot within the map
  - Path Planning with Obstacle Avoidance
  - Send a sequence of waypoints and execute those movements

• **Follow a line**: Learn how to start using the most basic and also the most powerful tool for perception in ROS: OpenCV.

• **Blob Tracking**: You will start using cameras in ROS and use the cmvision package for blob tracking.

• **Perception and Object Recognition**: Learn how to use Perception and Object Recognition to get the position of graspable objects.

• **Motion Planning with MoveIt**: Learn how to create a Moveit package for your manipulator robot. By completing this unit, you will be able to create a package that allows your robot to perform motion planning.

• **TurtleBot3 Micro Project**: To practice some of the knowledge that you’ve gained during this course. You will do this by doing a project, which will be based on 2 parts:
  - The first part will consist of applying the Navigation concepts you learned during the Course
  - The second part will consist on perform some Motion Planning using code, instead of MoveIt.
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