THE CONSTRUCT

COURSE
CATALOG

ROS eLearning Solutions Built for Campus

Génération
ROBOTS

Learn Jackal and ROS

COURSE OF PRODUCT

Learn how to create real world applications for a Jackal robot from ClearPath Robotics

In this course you will learn all you need to operate and use the Jackal robot platform in the real world. You will learn it through hands on experience with a simulated version of the real robot which will have the same exact interface as the real one, thanks to ROS infrastructure.

Learning Objectives

- Set up the navigation stack to make it navigate in an indoor environment, generating maps by its own.
- Create a program to navigate in outdoors environments through GPS data.
- Detect persons with the laser sensor.
- Detect person with its RGB stereo camera.
- Set WayPoints in a map to make it follow that path to patrole.
- Use the StereoCam to generate PointCloud Data
- Create a reactive programs based on all previously mentioned and create a patroling program that reacts to person detections.

PROJECT TASKS

- **Navigation Indoor:** The first thing you will need for a robot that patrols are the ability to move around without crashing into everything, for this you will learn:
  - How to move the robot
  - How to navigate without a map.
  - How to map the environment
  - How to set the navigation stack to be able to send him a location and be able to reach that destination.
  - How to send it a sequence of waypoints and execute those movements.

- **Set Outdoors Navigation:** Learn how to access the GPS data and use it to navigate around without a mapping system. You will have to rely upon the lasers to detect any obstacles and navigate around them to get to your destination in GPS coordinates. You will also learn how to visualize real maps in RVIZ based on GPS data.

- **Detect and Localize a Person:** Detect a person using two different systems:
  - Detect through leg detection with laser sensor: This system detect persons based on laser readings of leg patterns. This allows you to have even the position of the person, not only detect if there is a person or not.
  - Detect person through an RGB camera from the stereo-cam: This system doesn't give you directly the position of the person, but detects the persons through Video with OpenCV.
  - As extra, you are going to learn how to Get Point cloud from the stereo camera: Use the stereo camera to extract point cloud data from the scene.

- **Jackal Micro Project:** Create a program that makes Jackal patrol around using indoor navigation when inside a building and GPS data when it is outdoors.

Génération ROBOTS

Brand of the group NGX ROBOTICS

Official partner

service@generationrobots.com

+49 30 30 01 14 534

www.generationrobots.com