

[Exploring ROS using a 2 Wheeled Robot] #1: Basics of Robot Modeling using URDF

13 Videos that create a differential drive robot and simulate its motion and navigation.

First Video:

<https://www.youtube.com/watch?v=jmCR225ORs0&t=9s>

Published on Jan 30, 2018

In this video, we are going to explore the basics of robot modeling using the Unified Robot Description Format (URDF). At the end of this video, we will have a model ready and running in Gazebo simulator.

Full code & description of the video: <http://www.theconstructsim.com/explor...>

<http://www.theconstructsim.com/exploring-ros-2-wheeled-robot-part-01/>

or

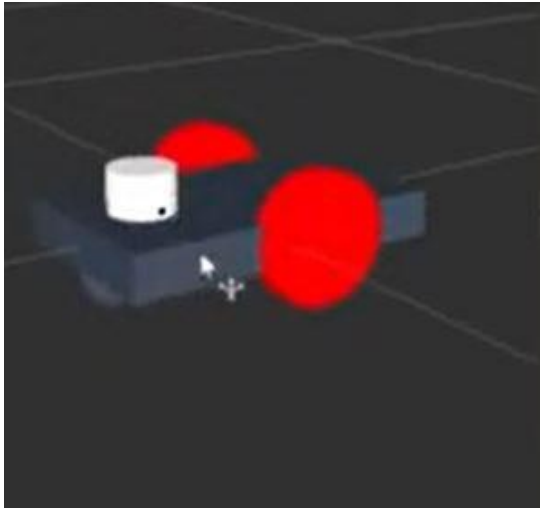
<http://www.theconstructsim.com/ros-projects-exploring-ros-using-2-wheeled-robot-part-1/>

This project is about using a Two Wheeled Mobile Robot to explore features and tools provided by ROS (Robot Operating System). We start building the robot from the scratch, using URDF (Unified Robot Description Format) and RViz to visualize it. Further, we describe the inertia and show how to simplify the URDF using XACROS. Later, motion planning algorithms, such as Obstacle Avoidance and Bugs 0, 1 and 2 are developed to be used in the built robot. Some ROS packages, like `robot_localization`, are used to built a map and localize on it.

- Part 1: Explore the basics of robot modeling using the URDF
- Part 2: Explore the macros for URDF files using XACRO files
- Part 3: Insert a laser scan sensor to the robot
- Part 4: Read the values of the laser scanner
- Part 5: An obstacle avoidance algorithm
- Part 6: Create an algorithm to go from a point to another
- Part 7: Work with wall following robot algorithm
- Part 8: Work with the Bug 0 algorithm
- Part 9: See the Bug 0 Foil
- Part 10: Perform the motion planning task Bug 1
- Part 11: From ROS Indigo to Kinetic
- Part 12: Implement code for Bug 2 behavior
- Part 13: Use ROS GMapping in our 2 wheeled robot

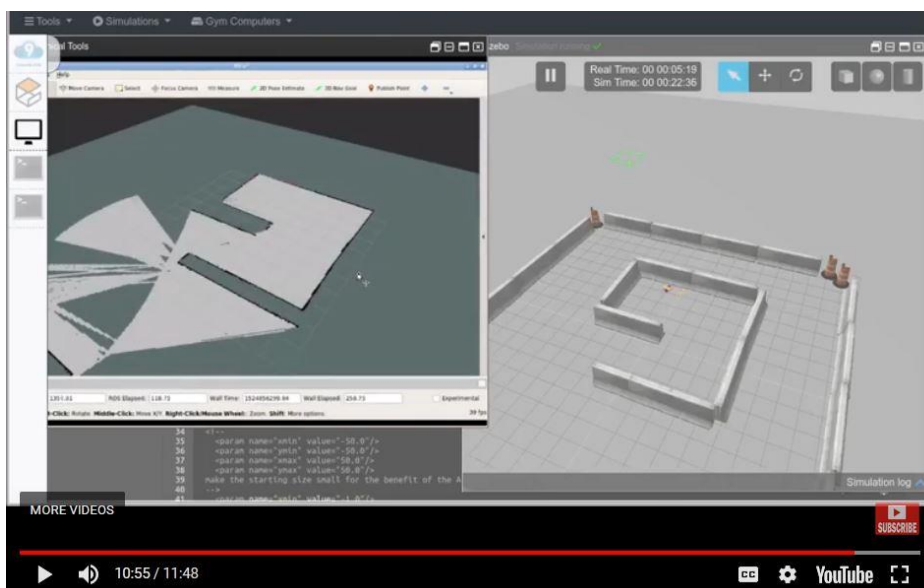
Exploring ROS with a 2 Wheeled Robot #Part 1

In this video, we are going to explore the basics of robot modeling using the Unified Robot Description Format (URDF). At the end of this video, we will have a model ready and running in Gazebo simulator.



GMapping – Exploring ROS with a 2 wheeled robot #Part 13

In this video we are going to use ROS GMapping in our 2 wheeled robot, the one used in the previous videos, to generate a map using SLAM technique. We are using the robot Laser Scan and Odometry data to generate the map.



ROS NAVIGATION IN 5 DAYS The Construct

Learn how to make your wheeled robot navigate using ROS

http://www.theconstructsim.com/construct-learn-develop-robots-using-ros/robotigniteacademy_learnros/ros-courses-library/ros-courses-ros-navigation-in-5-days/

Unit 1 Overview	https://www.youtube.com/watch?v=5nZc5iSr5is	
Unit 2 Rviz	https://www.youtube.com/watch?v=mYwlu4OVMR8	
Unit 3	https://www.youtube.com/watch?v=NANc8CkGI2U	Husky Robot
Unit 4 Path Planning Part 1	https://www.youtube.com/watch?v=zDUaazmSukM	
Unit 4 Path Planning Part 2	https://www.youtube.com/watch?v=vZhF6TW64Ms	
ROS Mastering LIVE- Class#2: Merging Odometry and IMU data for robot localization	https://www.youtube.com/watch?v=nQZeAafDEJE	