

**Project Overview**

Welcome to the Where Am I? localization project! In this project, you will learn to utilize ROS AMCL package to accurately localize a mobile robot inside a map in the Gazebo simulation environments.

Over the course of this lesson, you will learn several aspects of robotic software engineering with a focus on ROS:

* Create a ROS package that launches a custom robot model in a custom Gazebo world
* Utilize the ROS AMCL package and the Tele-Operation / Navigation Stack to localize the robot
* Explore, add, and tune specific parameters corresponding to each package to achieve the best possible localization results

Tasks: Where Am I Project

Task List

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Set up simulation: environment and robot

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Generate ground truth map from your Gazebo world

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Build your AMCL launch file

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Select proper localization parameters

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Optional: Add teleop node

* 

Put it all together

**Udacity Classroom Workspaces**

Udacity will provide you with a ROS Workspace to work on this project. It is in the ['Project Workspace'](https://classroom.udacity.com/nanodegrees/nd209/parts/a431d446-05df-4641-9e3d-79e1d55a7a2f/modules/b66739be-878e-4cea-8569-881b7eb2d34c/lessons/7dfe4265-e484-4efc-89e7-088540ff6720/concepts/a99f915f-2c34-4e0b-a96b-6fc381be08db) concept at the end of this lesson. By now you should be quite familiar with it. Here is the lesson for a recap: [Udacity Workspace Instructions](https://classroom.udacity.com/nanodegrees/nd209/parts/0778207d-f34a-4178-8ccf-9e06b5bd2203/modules/48156d08-abb1-4c03-a18d-9db738a0b92b/lessons/e0c61e8d-7eac-4807-8737-d2bd321ae7a2/concepts/47784838-aea6-4834-9ebb-79fbb3e135af)

Launch your Workspace's desktop GUI. Now, you are all set to start the Where Am I?Project!

**Native Installation & Virtual Machine**

If you are working with a native ROS installation or using a VM, some of the following package might need to be installed. You could install them as shown below:

$ sudo apt-get **install** ros-kinetic-navigation

$ sudo apt-**get** **install** ros-kinetic-**map**-**server**

$ sudo apt-**get** **install** ros-kinetic-**move**-base

$ sudo apt-**get** **install** ros-kinetic-amcl