

Robot development using ROS

Project Description:

The Robot Operating System (ROS) is a flexible framework for developing software with tools, libraries and conventions that facilitate the creation of complex robot behaviour on a wide variety of robotic platforms.

This project deals with the exploring the ROS framework for development of a robotic system with various sensors and actuators in order to understand the underlying concepts and to create a robot/quadcopter capable of forming a 3D map of a given environment using a depth camera (Microsoft Kinect).

Work Plan:

- Explore the ROS platform
- Interface a depth camera with ROS
- Create a 3-dimensional map of an indoor environment in simulation using a depth camera (like Microsoft Kinect), mounted on a robot/quadcopter
- Implement the same for an actual real-world scenario
- Interface actuators and other sensors
- Design and build a mobile robot/quadcopter with the above functionality controlled with ROS

Challenges:

- Learning ROS
- Implementing the SLAM algorithm
- Designing and building a robot/quadcopter