

ROS



Developer Student Clubs
McMaster University

x





Robot Software Platform

Need for a platform that helps us

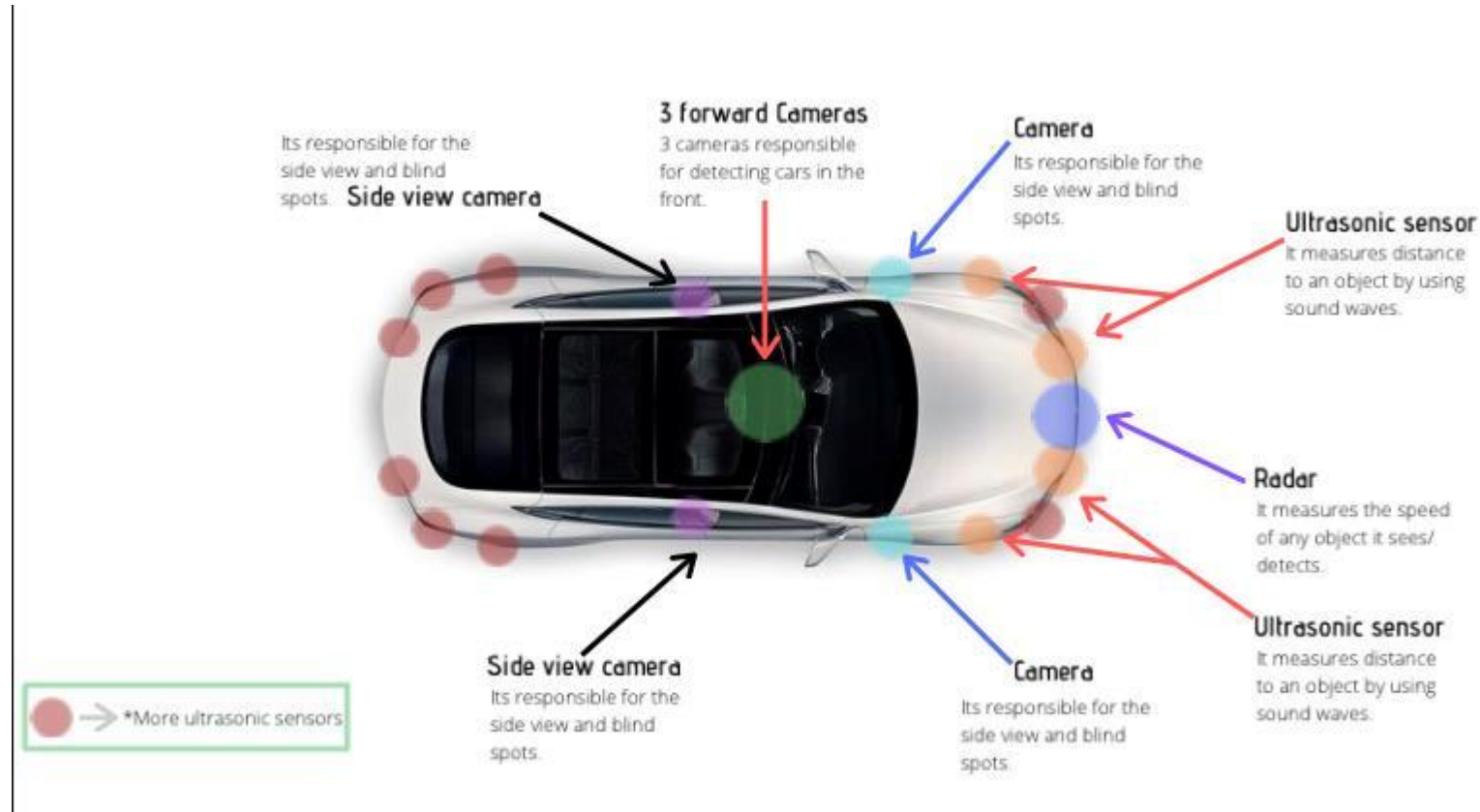
- Make reusable program
- Handles the communication
- Support for development tools



Various Robot Software Platforms



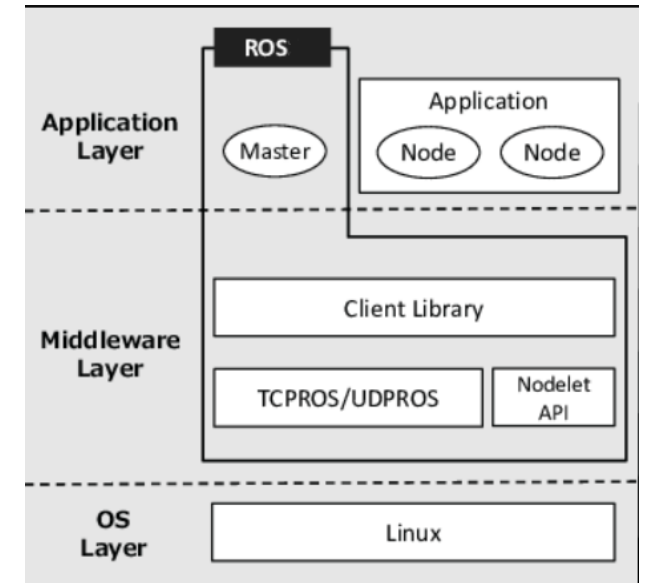
Think of car like Tesla





Robot Operating System

- ROS is an open-source meta operating system



- It provides the services you would expect from an operating system, including hardware abstraction, low-level device control, message-passing,



Why ROS

- Community
- Proven in Use
- Multi-domain & Multi-platform
- Functionality



ROS-Industrial





Components of ROS

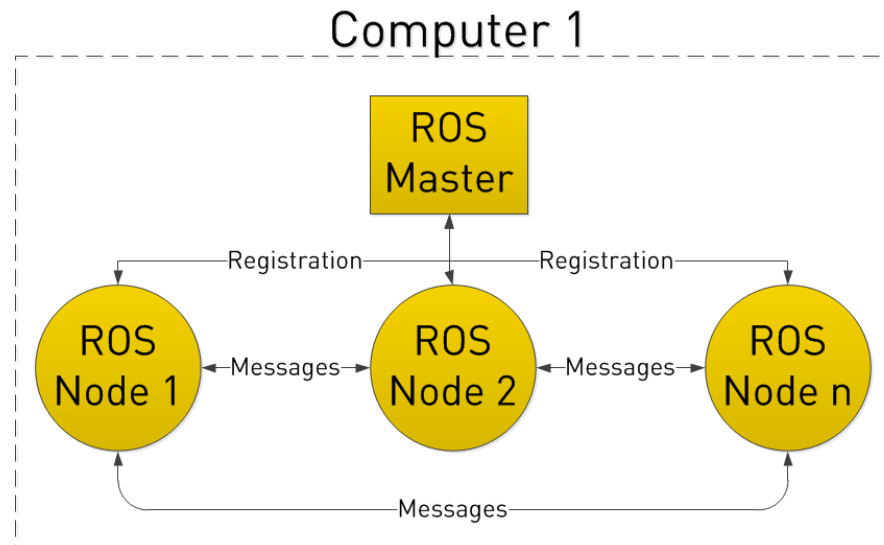




Some ROS terminology and demos

ROS Master & *'roscore'*

The ROS master acts as a name server for node-to-node connections and message communication.





ROS Node & '*roslun*'

A node refers to the smallest unit of processor running in ROS

Think of it as one executable program

Specialized function

```
roslun package_name node_name
```

```
roslaunch package_name launch_file_name
```




Messages & Topic

- A node sends or receives data between nodes via a message.

Messages are variables such as :

`integer, floating point, boolean`

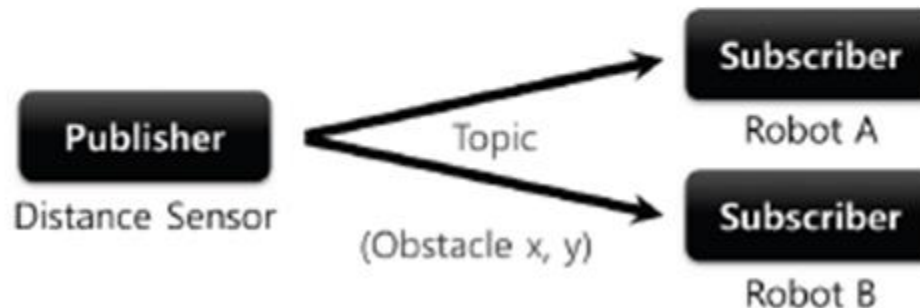
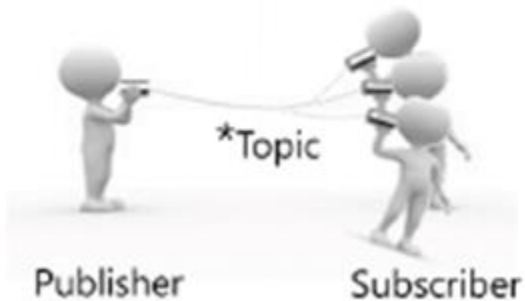
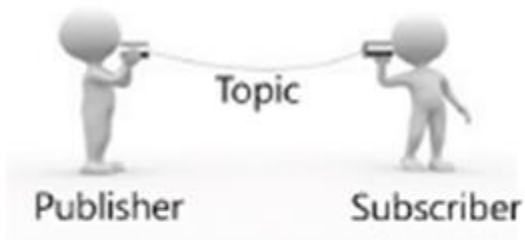
- The topic is literally like a topic in a conversation.
- Nodes can get information from topics they are interested in



Publisher & Subscriber

The publisher node registers its own information and topic with the master, and sends a message to connected subscriber nodes

Likewise, the subscriber node receives data from related publishers





SLAM

- Simultaneous Localization and Mapping

