Lecture 06.01   ROS graphs

ROS graphs
graph theory
nodes
edges

A *ROS graph* is a graph (*à la graph theory*) representation of a ROS systems, such as that of Figure 06.1. Graph *nodes* represent ROS programs running on potentially different machines. Graph *edges* represent the peer-to-peer communication of messages among nodes.

Figure 06.1: a ROS graph with nodes in green and edges in black.

06.01.1   Big Other `roscore`

Jacques Lacan introduced the concept of the "big Other," who is, among other things, the virtual repository of all knowledge, the invisible guarantor that the network of symbols is consistent, and the registrar of the symbolic.[1]

roscore
The big Other of ROS is the communication service *roscore*: all nodes of a ROS system register the message streams they provide and those to which they would like to subscribe.

topics
These message streams are organized by *topics*: a node that publishes information for other nodes does so by registering a topic with `roscore`. `roscore` maintains lists of these topics and subscribers thereto and provides these details to any node upon request. If node `foo` publishes to a topic `x`, subscribed-to by node `bar`, `foo` would find out that `bar` has subscribed, then would *directly* transmit messages to `bar` on topic `x`, as shown in Figure 06.2.
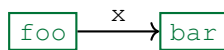

Figure 06.2: a ROS graph of nodes `foo` and `bar` showing the peer-to-peer transmission of messages on topic `x`.

Thus, big Other `roscore` is virtually in all ROS graphs, required for its existence, but we don't include it explicitly. We must launch a `roscore` service for every ROS system. Doing so is trivial in a Terminal window, as follows.

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[1]See, for instance, *How to Read Lacan* (Žižek, 2006).

```
roscore
```

Fortunately, we won't have to remember to do this manually every time, as we'll see when we discuss `roslaunch` in Lecture 06.03.2.