

MRSD Individual Lab Report 07

Name: Sida Wang
Group Name: Group G, RoboGrapher
Teammates: Tiffany May, Rohit Dashrathy,
Jimit Gandhi, Gauri Gandhi

February 10, 2016

1. Individual Progress

1.1 Upgraded new Chromebook to ROS Indigo

First, I uninstalled the original operating system on Chromebook and went into developer mode, so that local data will be erased. And then I downloaded the Ubuntu installation package: Crouton and installed the files. After that, I used the command “`sudo startxfce4`” to boot into Crouton. At last, I installed ROS Indigo, Rocon, SSH, and other softwares or tools we may need for our project.

1.2 Studied Rocon

Here is the sequence of how I studied Rocon:

- (1). Rocon installation
- (2). Studied `rocon_launch` command. I learned how to write launch file of distributed system, how to launch the system with single master computer, and how to launch the distributed system with multi-master computers.
- (3). Studied `rocon_remocon` command to check the data transfer information of the distributed system.
- (4). SSH tools: I learned how to ping other master computer, and how to check the ip address of my laptop, and how to set the value of `ROS_MASTER_URI` and other parameters used for communication.

1.3 Setup a distributed chatter concert system through wireless

I and Gauri worked on setting up a distributed system through the wifi in our office.

There is 1 talker and 2 listeners on the concert's launch file, and Gauri's laptop will be the master computer and she will `rocon_launch` that file. And I

will be the second master to roslaunch another launch file where there is only 1 listener. And we communicate with each other through the wifi in our office.

Figure 1 shows the relationship between the nodes. The conductor, dude, dude1 and dudette are through local communication, which is created by Gauri's launch file. And dude2 is created by my launch file and communicate with the conductor through the wifi.

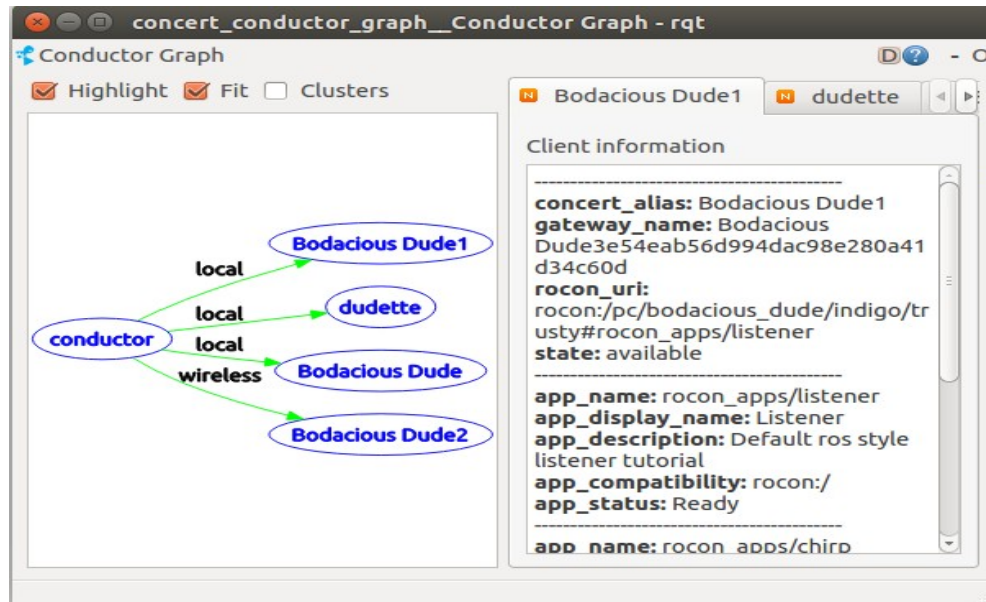
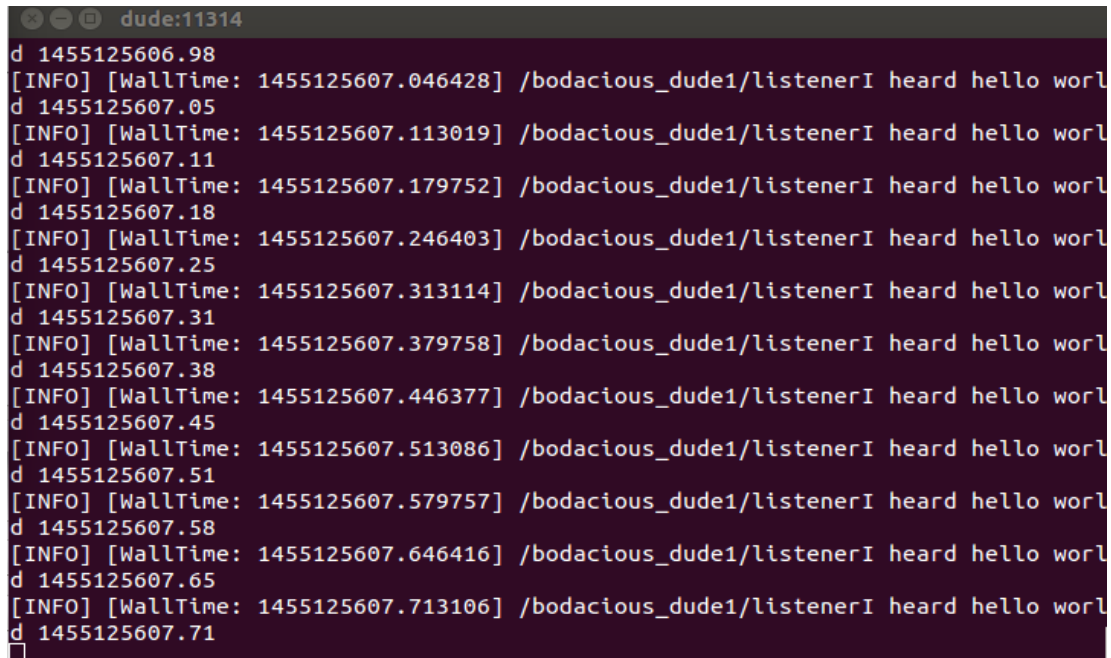


Figure 1: concert conductor graph

Figure 2 – 4 shows the output of the talker and listeners in our system.

```
dudette:11312
[INFO] [WallTime: 1455125594.045847] hello world 1455125594.05
[INFO] [WallTime: 1455125594.112548] hello world 1455125594.11
[INFO] [WallTime: 1455125594.179199] hello world 1455125594.18
[INFO] [WallTime: 1455125594.245828] hello world 1455125594.25
[INFO] [WallTime: 1455125594.312520] hello world 1455125594.31
[INFO] [WallTime: 1455125594.379160] hello world 1455125594.38
[INFO] [WallTime: 1455125594.445854] hello world 1455125594.45
[INFO] [WallTime: 1455125594.512519] hello world 1455125594.51
[INFO] [WallTime: 1455125594.579178] hello world 1455125594.58
[INFO] [WallTime: 1455125594.645851] hello world 1455125594.65
[INFO] [WallTime: 1455125594.712554] hello world 1455125594.71
[INFO] [WallTime: 1455125594.779200] hello world 1455125594.78
[INFO] [WallTime: 1455125594.845856] hello world 1455125594.85
[INFO] [WallTime: 1455125594.912542] hello world 1455125594.91
[INFO] [WallTime: 1455125594.979192] hello world 1455125594.98
[INFO] [WallTime: 1455125595.045823] hello world 1455125595.05
[INFO] [WallTime: 1455125595.112514] hello world 1455125595.11
[INFO] [WallTime: 1455125595.179240] hello world 1455125595.18
[INFO] [WallTime: 1455125595.245865] hello world 1455125595.25
[INFO] [WallTime: 1455125595.312533] hello world 1455125595.31
[INFO] [WallTime: 1455125595.379193] hello world 1455125595.38
[INFO] [WallTime: 1455125595.445840] hello world 1455125595.45
[INFO] [WallTime: 1455125595.512529] hello world 1455125595.51
```

Figure 2: talker



```
d 1455125606.98
[INFO] [WallTime: 1455125607.046428] /bodacious_dude1/listenerI heard hello worl
d 1455125607.05
[INFO] [WallTime: 1455125607.113019] /bodacious_dude1/listenerI heard hello worl
d 1455125607.11
[INFO] [WallTime: 1455125607.179752] /bodacious_dude1/listenerI heard hello worl
d 1455125607.18
[INFO] [WallTime: 1455125607.246403] /bodacious_dude1/listenerI heard hello worl
d 1455125607.25
[INFO] [WallTime: 1455125607.313114] /bodacious_dude1/listenerI heard hello worl
d 1455125607.31
[INFO] [WallTime: 1455125607.379758] /bodacious_dude1/listenerI heard hello worl
d 1455125607.38
[INFO] [WallTime: 1455125607.446377] /bodacious_dude1/listenerI heard hello worl
d 1455125607.45
[INFO] [WallTime: 1455125607.513086] /bodacious_dude1/listenerI heard hello worl
d 1455125607.51
[INFO] [WallTime: 1455125607.579757] /bodacious_dude1/listenerI heard hello worl
d 1455125607.58
[INFO] [WallTime: 1455125607.646416] /bodacious_dude1/listenerI heard hello worl
d 1455125607.65
[INFO] [WallTime: 1455125607.713106] /bodacious_dude1/listenerI heard hello worl
d 1455125607.71
```

Figure 3: Listener1



```
d 1455125622.71
[INFO] [WallTime: 1455125622.779817] /bodacious_dude2/listenerI heard hello worl
d 1455125622.78
[INFO] [WallTime: 1455125622.846263] /bodacious_dude2/listenerI heard hello worl
d 1455125622.85
[INFO] [WallTime: 1455125622.913034] /bodacious_dude2/listenerI heard hello worl
d 1455125622.91
[INFO] [WallTime: 1455125622.979749] /bodacious_dude2/listenerI heard hello worl
d 1455125622.98
[INFO] [WallTime: 1455125623.046329] /bodacious_dude2/listenerI heard hello worl
d 1455125623.05
[INFO] [WallTime: 1455125623.113051] /bodacious_dude2/listenerI heard hello worl
d 1455125623.11
[INFO] [WallTime: 1455125623.179723] /bodacious_dude2/listenerI heard hello worl
d 1455125623.18
[INFO] [WallTime: 1455125623.246386] /bodacious_dude2/listenerI heard hello worl
d 1455125623.25
[INFO] [WallTime: 1455125623.313097] /bodacious_dude2/listenerI heard hello worl
d 1455125623.31
[INFO] [WallTime: 1455125623.379676] /bodacious_dude2/listenerI heard hello worl
d 1455125623.38
[INFO] [WallTime: 1455125623.446310] /bodacious_dude2/listenerI heard hello worl
d 1455125623.45
```

Figure 4: Listener2

2. Challenges

2.1 The problems in setting up the distributed system.

When Gauri and I worked on setting up the distributed system of the chatter concert, we spent much time in solving a problem: the listener in the second laptop cannot receive the information from the talker in the first laptop. And Gauri found out the solution:

`<arg name="disable_zeroconf" default="false"/>`: we should set the default from true to false, and then the 2 masters can be connected. The reason why this solution works is not clear to us, but we will try to do more research on it.

3. Team Work

This week our team mainly worked on Rocon for multi-master system setup and Gazebo simulation. Gauri and I worked on Rocon and we set up the distributed system between our laptops. Jimit also studied Rocon. And Jimit, Rohit, and Tiffany mainly worked on Gazebo simulation.

Jimit studied Rocon with me and Gauri. He also studied Gazebo and he has set up multi-master system on Gazebo for simulation.

Gauri was working with me on multi-master data communication with Rocon. She solved our biggest problem when setting up the distributed system. And we learned Rocon together.

Rohit studied Gazebo and he set up the environment for simulation on Gazebo.

Tiffany: Tiffany also studied Gazebo and set up a single robot environment for simulation.

4. Future Plan

We plan to redesign the pan-tilt system with camera zoom and control functionality. Furthermore, we will also work on 3 robot navigation with Gazebo simulation as well as 3 IntraFace facial expression recognition with Rocon. And we will use our new Chromebook to test our distributed system.