

ROSProcessingjs NXT

Evan Stites-Clayton

Goals

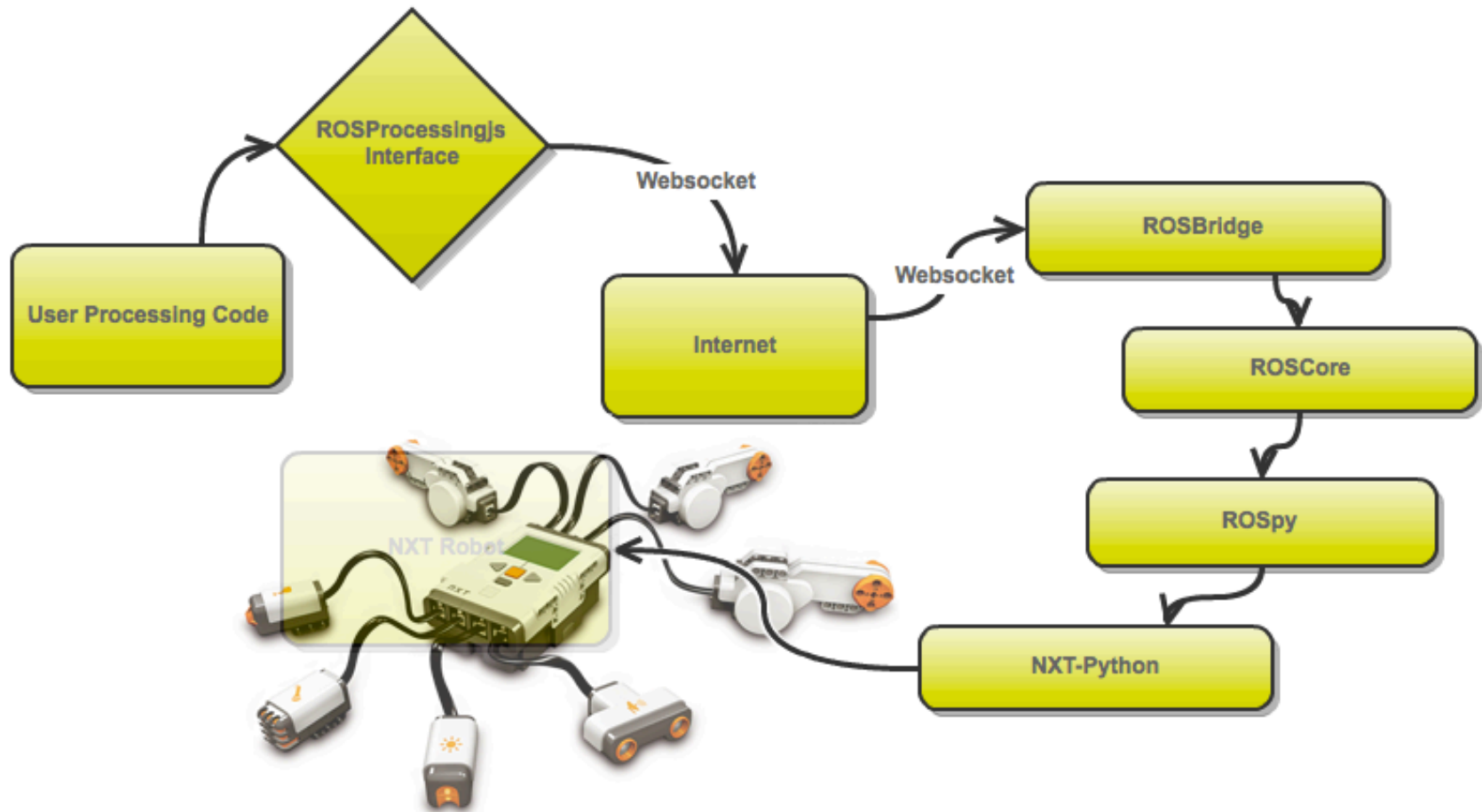
- Make programming NXT easier
- Allow for coding of Lego Mindstorms NXT brick via Processing language
- Create an easy environment for coding and display of an output program
- Make it as easy as possible to recreate this setup

Tools

- Jihoon's processing – ros js platform
- Rosjs (Websockets)
- Ros
- Processingjs
- Nxt_ros
- Nxt_python
- Rospy

Draw on board how they fit together

How It Works:

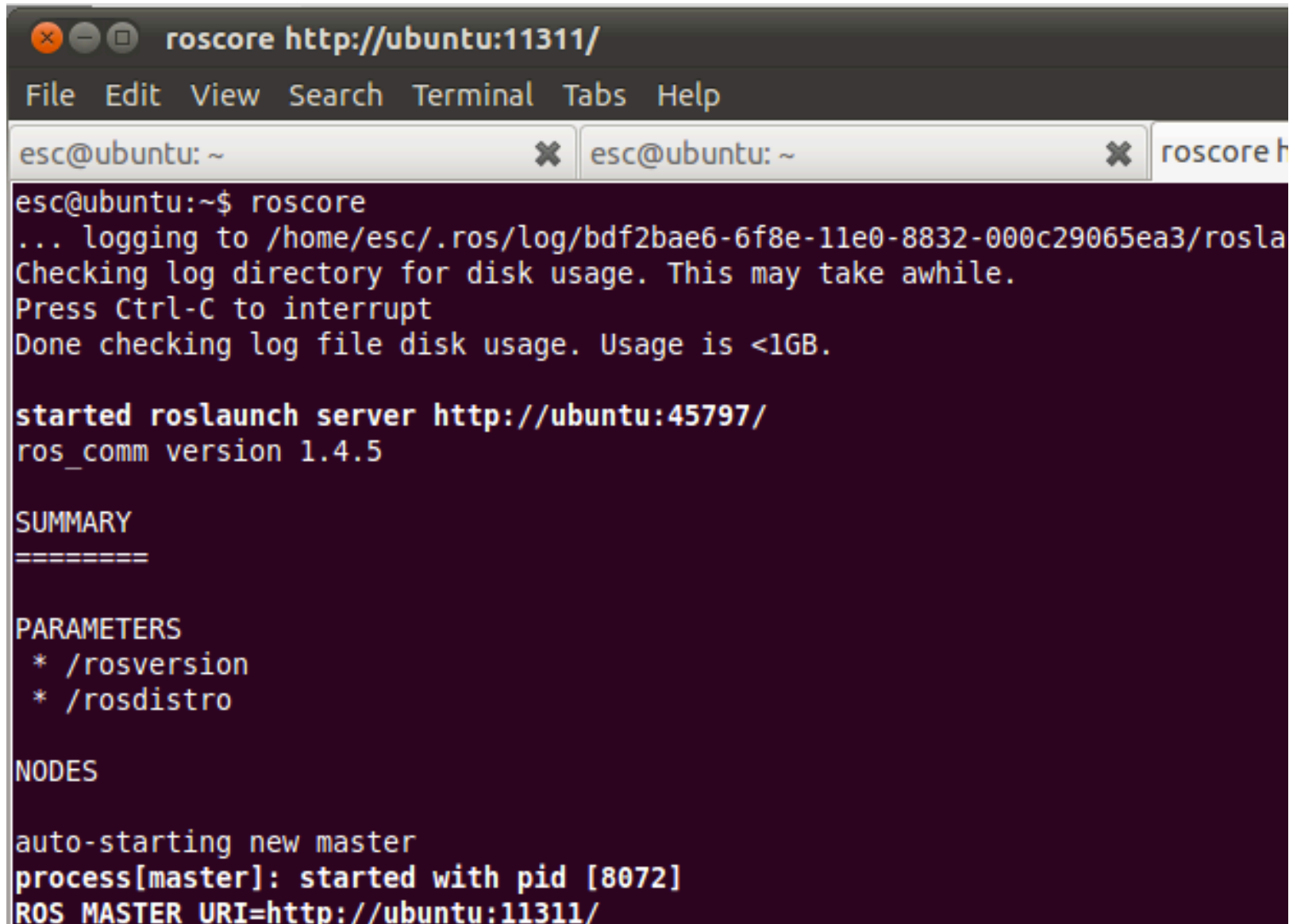


ROSProcessingNXT

Processing Examples

- WASD Driver
 - Simple one way communication
- Enclosure Escape
 - Autonomous, 2way communication
 - buggy

What it takes: Roscore



```
roscore http://ubuntu:11311/
File Edit View Search Terminal Tabs Help
esc@ubuntu: ~
esc@ubuntu: ~
esc@ubuntu: ~$ roscore
... logging to /home/esc/.ros/log/bdf2bae6-6f8e-11e0-8832-000c29065ea3/rosla
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://ubuntu:45797/
ros_comm version 1.4.5

SUMMARY
=====

PARAMETERS
* /rosversion
* /rostdistro

NODES

auto-starting new master
process[master]: started with pid [8072]
ROS MASTER URI=http://ubuntu:11311/
```

What it takes: Rosjs

```
esc@ubuntu: ~/rosJsInstall/rosjs/bin
File Edit View Search Terminal Help
esc@ubuntu:~/rosJsInstall/rosjs/bin$ ./rosjs.py
Connection from 127.0.0.1:36059
2 concurrent connections.

-----
GET / HTTP/1.1
Upgrade: WebSocket
Connection: Upgrade
Host: localhost:9090
Origin: file://
Sec-WebSocket-Key1: 2103      65 66 70 B
Sec-WebSocket-Key2: &d 154@{U3aFT3y0 1 67 N 0#[

-----
actual handshake!
-----

closed 9
Connection from 127.0.0.1:59445
2 concurrent connections.
```

What it takes: Special Chrome

The image shows a ROS GUI interface on the left and a terminal window on the right. The GUI has a dark grey area with the text "Nothing loaded yet!". Below this are three buttons: "Start Up", "Run", and "Stop". Underneath the buttons is a "Reference" section with the following text:

connect('ros addr') - Connect to ROS
subscribe('topic_name',function name) - Subscribe a topic
move(x,z) - Publish Twist message

run button - calls run() in processing
stop button - calls stop() in processing

At the bottom of the GUI, there is a black status bar with the following text:

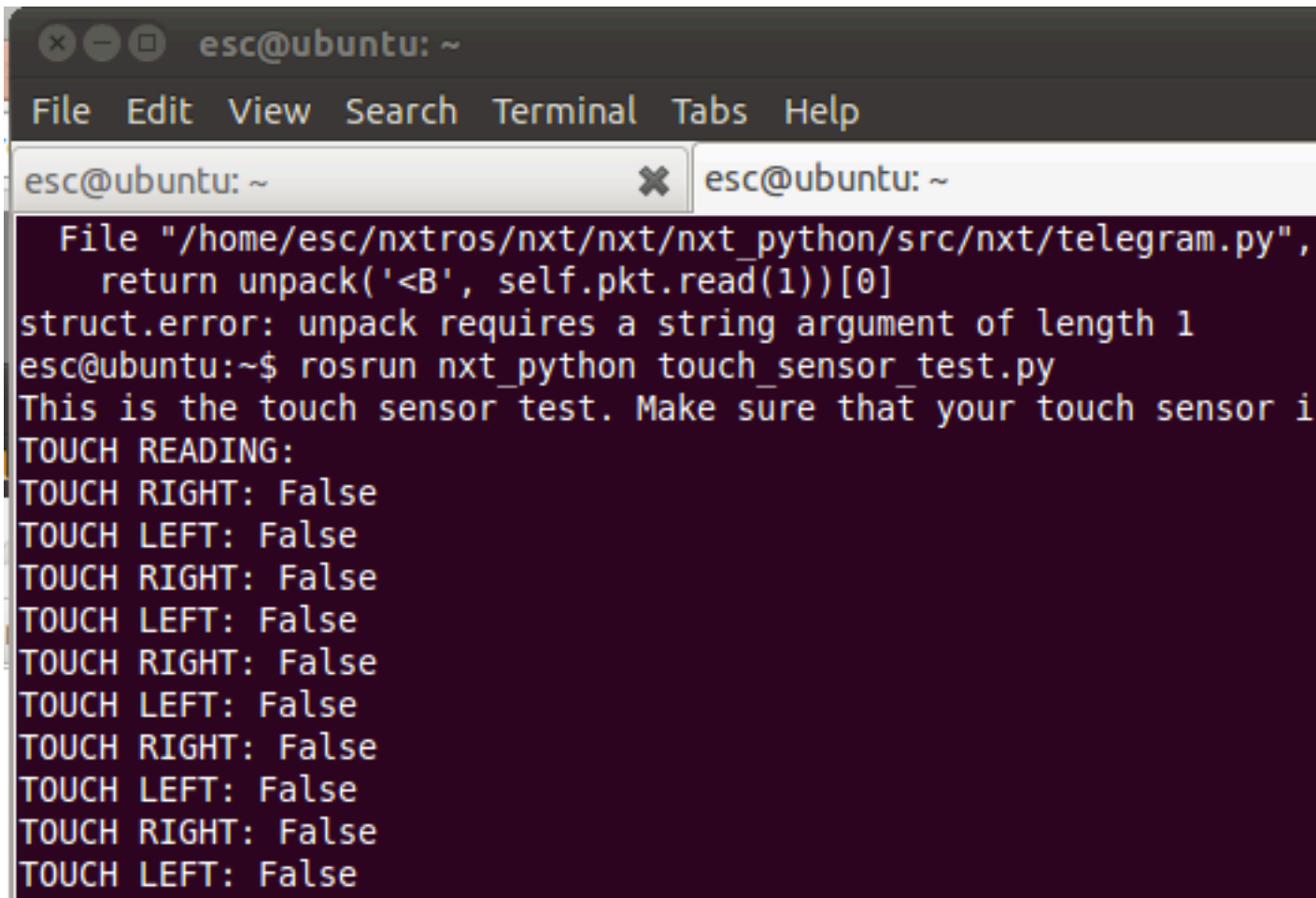
```
Trying to connect...  
connected to ROS  
initializing ROSProxy...  
initialized
```

The terminal window on the right shows the command prompt "esc@ubuntu: ~" and the command "google-chrome --allow-file-access-from-f". Below the command, there are two error messages:

```
[2213:2213:1736660359:ERROR:extension_prefs.cc(734)] Ba  
for extension 'hpibmhghjndideebpackbdlnpcgkcppp'  
[2213:2213:1736660414:ERROR:extension_prefs.cc(734)] Ba  
for extension 'lncjcfkpannmofmpgdfoonkniofdnaba'
```






What it takes: nxt_python

User doesn't need to modify the python file, but needs to run it



```
esc@ubuntu: ~
File Edit View Search Terminal Tabs Help
esc@ubuntu: ~
File "/home/esc/nxtros/nxt/nxt/nxt_python/src/nxt/telegram.py",
  return unpack('<B', self.pkt.read(1))[0]
struct.error: unpack requires a string argument of length 1
esc@ubuntu:~$ rosrn nxt_python touch_sensor_test.py
This is the touch sensor test. Make sure that your touch sensor i
TOUCH READING:
TOUCH RIGHT: False
TOUCH LEFT: False
TOUCH RIGHT: False
TOUCH LEFT: False
TOUCH RIGHT: False
TOUCH LEFT: False
TOUCH RIGHT: False
TOUCH LEFT: False
TOUCH RIGHT: False
TOUCH LEFT: False
```

Goals - Results

- Make programming NXT easier 
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Challenges

- Lots of moving parts
- Wired connection
- Battery Life
- Difficult to debug various Systems

Possible Improvements for Final

- Bluetooth connective for wireless
- Install instructions (Make Wiki)
- Roslaunch file for command line simplification
- Combined install package
- Nicer user interface html