

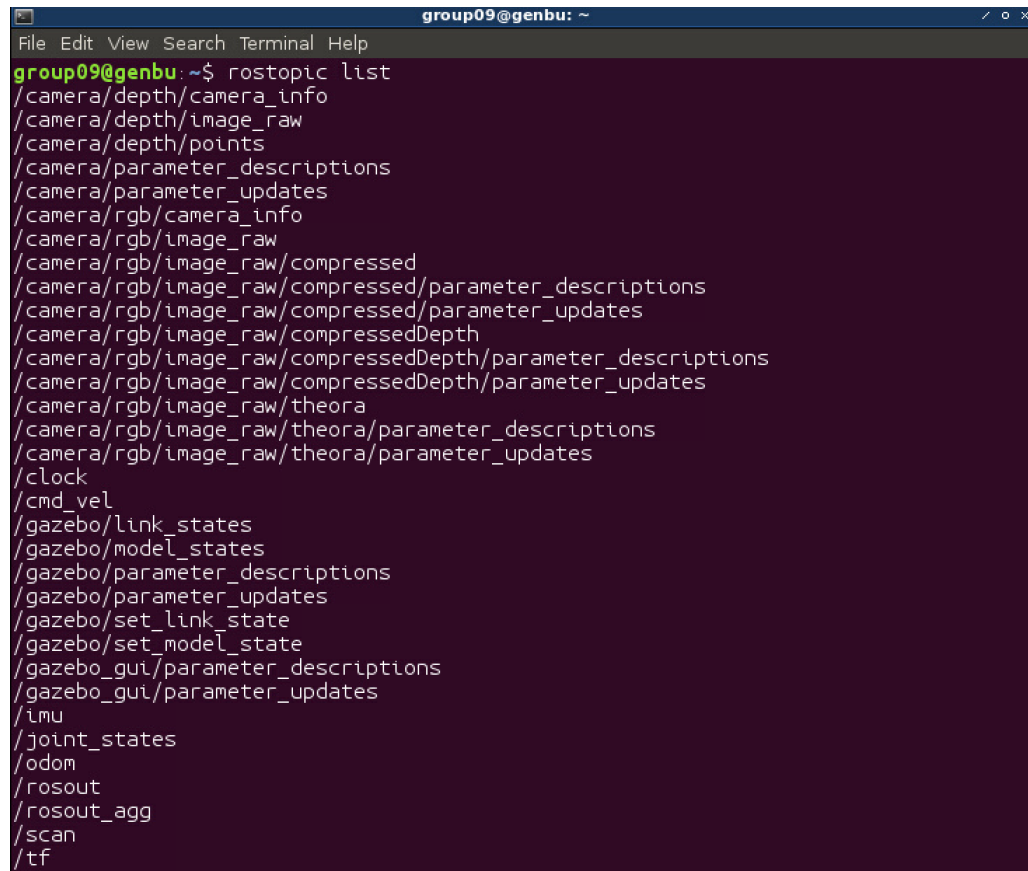
# AA274A Section 3

Changqing Lu

October 5 2020

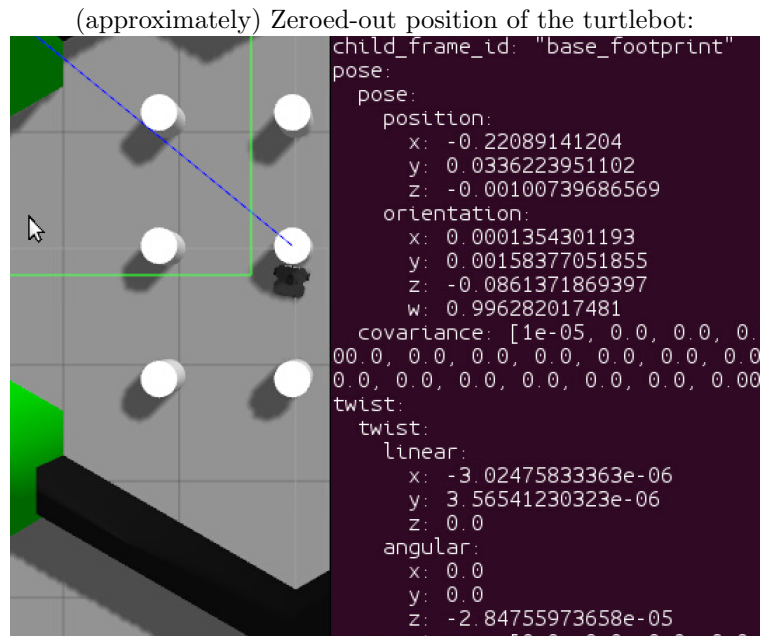
## Problem 1

List of rostopics:

A terminal window titled 'group09@genbu: ~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'rostopic list' has been executed, displaying a list of ROS topics. The topics are listed as follows:

```
group09@genbu: ~$ rostopic list
/camera/depth/camera_info
/camera/depth/image_raw
/camera/depth/points
/camera/parameter_descriptions
/camera/parameter_updates
/camera/rgb/camera_info
/camera/rgb/image_raw
/camera/rgb/image_raw/compressed
/camera/rgb/image_raw/compressed/parameter_descriptions
/camera/rgb/image_raw/compressed/parameter_updates
/camera/rgb/image_raw/compressedDepth
/camera/rgb/image_raw/compressedDepth/parameter_descriptions
/camera/rgb/image_raw/compressedDepth/parameter_updates
/camera/rgb/image_raw/theora
/camera/rgb/image_raw/theora/parameter_descriptions
/camera/rgb/image_raw/theora/parameter_updates
/clock
/cmd_vel
/gazebo/link_states
/gazebo/model_states
/gazebo/parameter_descriptions
/gazebo/parameter_updates
/gazebo/set_link_state
/gazebo/set_model_state
/gazebo_gui/parameter_descriptions
/gazebo_gui/parameter_updates
/imu
/joint_states
/odom
/rosout
/rosout_agg
/scan
/tf
```

## Problem 2

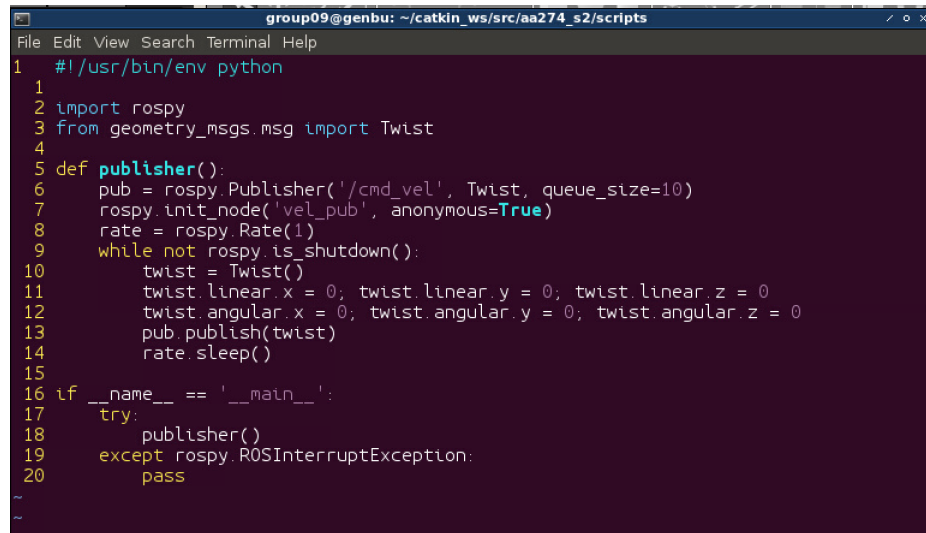


Message type: nav\_msgs/Odometry

The message contains position (x,y,z), orientation (x,y,z,w), linear and angular velocity, and covariances

## Problem 3

Python code for publisher:

A screenshot of a terminal window with a dark background and light-colored text. The window title is "group09@genbu: ~/catkin\_ws/src/aa274\_s2/scripts". The menu bar shows "File", "Edit", "View", "Search", "Terminal", and "Help". The code is a Python script for a ROS publisher. It starts with a shebang line, imports rospy and Twist, and defines a publisher function. The function initializes a publisher, sets a rate, and enters a loop that publishes zero velocity commands until the node is shutdown. A main block calls the publisher function and handles KeyboardInterrupt exceptions.

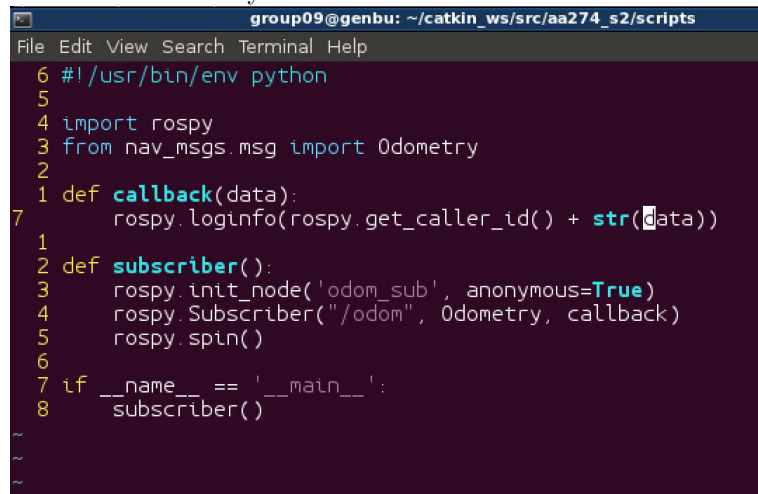
```
1 #!/usr/bin/env python
2 import rospy
3 from geometry_msgs.msg import Twist
4
5 def publisher():
6     pub = rospy.Publisher('/cmd_vel', Twist, queue_size=10)
7     rospy.init_node('vel_pub', anonymous=True)
8     rate = rospy.Rate(1)
9     while not rospy.is_shutdown():
10         twist = Twist()
11         twist.linear.x = 0; twist.linear.y = 0; twist.linear.z = 0
12         twist.angular.x = 0; twist.angular.y = 0; twist.angular.z = 0
13         pub.publish(twist)
14         rate.sleep()
15
16 if __name__ == '__main__':
17     try:
18         publisher()
19     except rospy.ROSInterruptException:
20         pass
```

Commanded linear and angular velocities:

```
group09@genbu: ~  
File Edit View Search Terminal Help  
angular:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
---  
linear:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
angular:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
---  
linear:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
angular:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
---  
linear:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
angular:  
  x: 0.0  
  y: 0.0  
  z: 0.0  
---  
I
```

## Problem 4

Python code for subscriber:



```
group09@genbu: ~/catkin_ws/src/aa274_s2/scripts
File Edit View Search Terminal Help
6 #!/usr/bin/env python
5
4 import rospy
3 from nav_msgs.msg import Odometry
2
1 def callback(data):
7     rospy.loginfo(rospy.get_caller_id() + str(data))
1
2 def subscriber():
3     rospy.init_node('odom_sub', anonymous=True)
4     rospy.Subscriber("/odom", Odometry, callback)
5     rospy.spin()
6
7 if __name__ == '__main__':
8     subscriber()
~
~
~
```

Odometry information read by subscriber:

[illegible]