

UWB testing

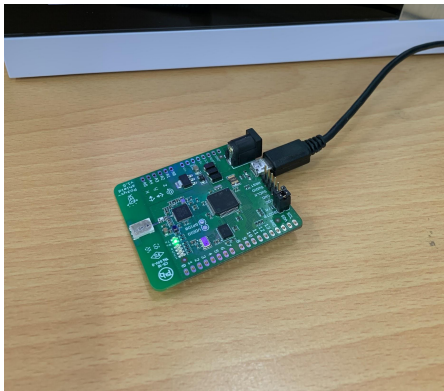
package : uwb_test

1. Setup :

Choose four uwb sensors , choose 3 and connect to the power , these are used as anchors .



And 1 using the micro usb port plug into your computer , this is used as a tag .



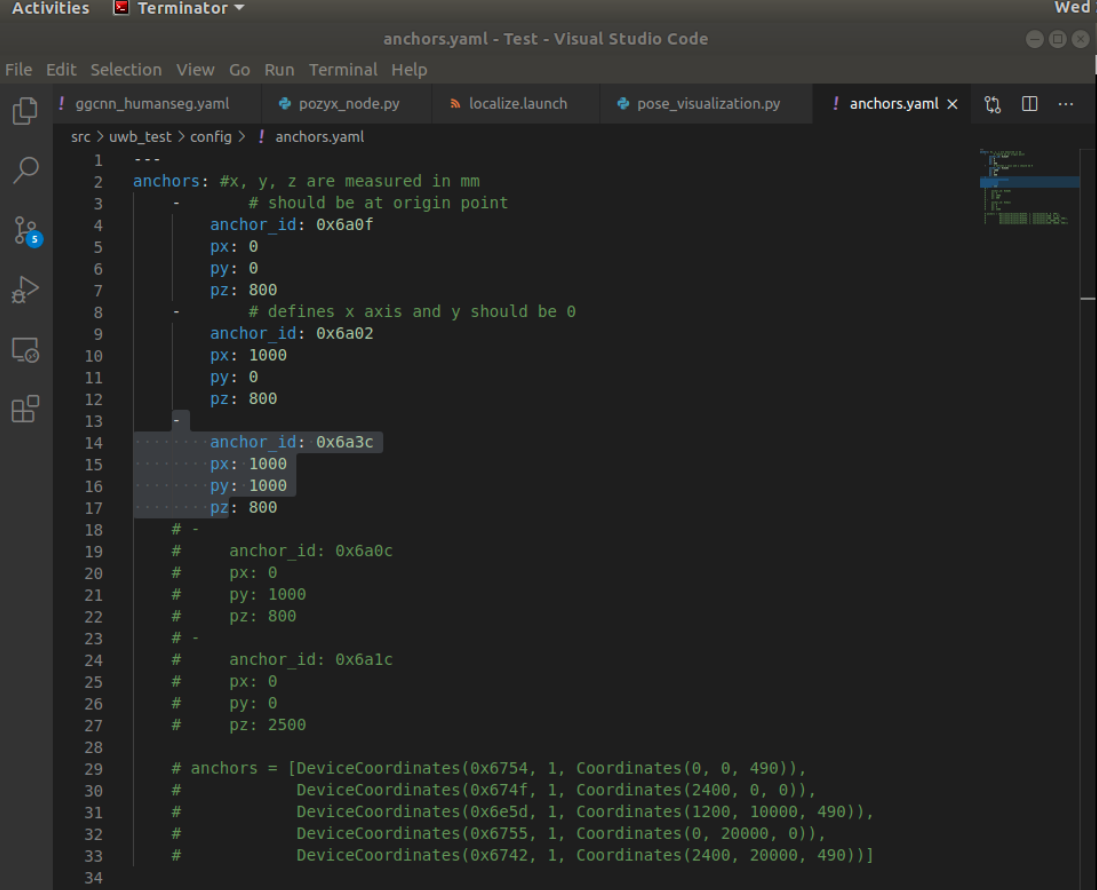
Each sensor has its id shown behind .



After connecting all sensors , the light of the sensor should flash (one green one red) , or it is broken .

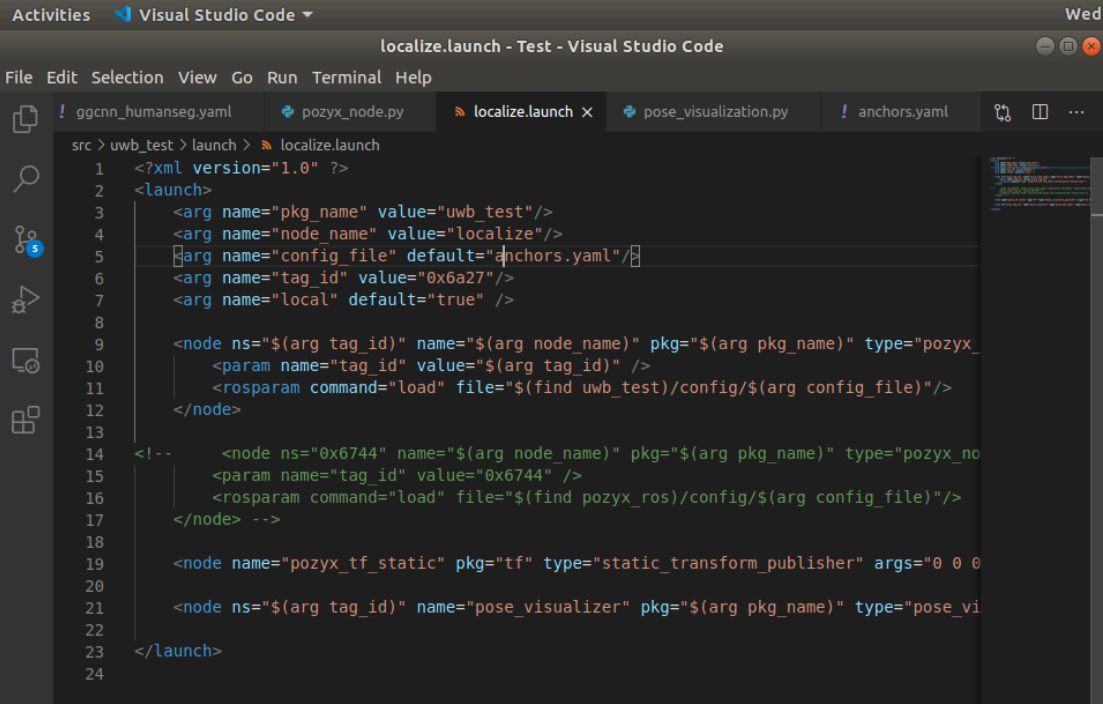
Place all sensors just on your desk .

Open the 'anchors.yaml' in the package , this is the id config file of anchors , change the id which you use .



```
1  ---
2  anchors: #x, y, z are measured in mm
3          # should be at origin point
4          anchor_id: 0x6a0f
5          px: 0
6          py: 0
7          pz: 800
8          # defines x axis and y should be 0
9          anchor_id: 0x6a02
10         px: 1000
11         py: 0
12         pz: 800
13     -
14     ..... anchor_id: 0x6a3c
15     ..... px: 1000
16     ..... py: 1000
17     ..... pz: 800
18     # -
19     #   anchor_id: 0x6a0c
20     #   px: 0
21     #   py: 1000
22     #   pz: 800
23     # -
24     #   anchor_id: 0x6a1c
25     #   px: 0
26     #   py: 0
27     #   pz: 2500
28
29     # anchors = [DeviceCoordinates(0x6754, 1, Coordinates(0, 0, 490)),
30     #             DeviceCoordinates(0x674f, 1, Coordinates(2400, 0, 0)),
31     #             DeviceCoordinates(0x6e5d, 1, Coordinates(1200, 10000, 490)),
32     #             DeviceCoordinates(0x6755, 1, Coordinates(0, 20000, 0)),
33     #             DeviceCoordinates(0x6742, 1, Coordinates(2400, 20000, 490))]
34
```

Open localize.launch , change the 'tag_id' which you use .



```
src > uwb_test > launch > localize.launch
1 <?xml version="1.0" ?>
2 <launch>
3   <arg name="pkg_name" value="uwb_test"/>
4   <arg name="node_name" value="localize"/>
5   <arg name="config_file" default="anchors.yaml"/>
6   <arg name="tag_id" value="0x6a27"/>
7   <arg name="local" default="true" />
8
9   <node ns="$(arg tag_id)" name="$(arg node_name)" pkg="$(arg pkg_name)" type="pozyx_
10     <param name="tag_id" value="$(arg tag_id)" />
11     <rosparam command="load" file="$(find uwb_test)/config/$(arg config_file)"/>
12   </node>
13
14   <!-- <node ns="0x6744" name="$(arg node_name)" pkg="$(arg pkg_name)" type="pozyx_no
15     <param name="tag_id" value="0x6744" />
16     <rosparam command="load" file="$(find pozyx_ros)/config/$(arg config_file)"/>
17   </node> -->
18
19   <node name="pozyx_tf_static" pkg="tf" type="static_transform_publisher" args="0 0 0
20
21   <node ns="$(arg tag_id)" name="pose_visualizer" pkg="$(arg pkg_name)" type="pose_vi
22
23 </launch>
24
```

2. Testing :

PC \$ roslaunch uwb_test localize.launch

```
21:34
austin@austin: ~/Test/src/uwb_test/src
austin@austin: ~/Test/src/uwb_test/src 105x52
... shutting down processing monitor complete
done
austin@austin:~/Test/src/uwb_test/src$ roslaunch uwb_test localize.launch
... logging to /home/austin/.ros/log/18fcd7d0-8ca5-11eb-94c4-309c23e5f49f/roslaunch-austin-26532.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://192.168.50.195:33525/

SUMMARY
=====

PARAMETERS
* /0x6a27/localize/anchors: [{'pz': 800, 'px'...
* /0x6a27/localize/tag_id: 0x6a27
* /roscdistro: melodic
* /rosversion: 1.14.9

NODES
/
  pozyx_tf_static (tf/static_transform_publisher)
/0x6a27/
  localize (uwb_test/pozyx_node.py)
  pose_visualizer (uwb_test/pose_visualization.py)

auto-starting new master
process[master]: started with pid [26546]
ROS_MASTER_URI=http://192.168.50.195:11311

setting /run_id to 18fcd7d0-8ca5-11eb-94c4-309c23e5f49f
process[rosout-1]: started with pid [26557]
started core service [/rosout]
process[0x6a27/localize-2]: started with pid [26560]
process[pozyx_tf_static-3]: started with pid [26566]
process[0x6a27/pose_visualizer-4]: started with pid [26567]
(0.0, 0.0, 0.8)
(1.0, 0.0, 0.8)
(1.0, 1.0, 0.8)
[{'pz': 800, 'px': 0, 'py': 0, 'anchor_id': 27151}, {'pz': 800, 'px': 1000, 'py': 0, 'anchor_id': 27138}]
[{'pz': 800, 'px': 1000, 'py': 1000, 'anchor_id': 27196}]
[INFO] [1616592629.350941]: my id: 0x6a27
[INFO] [1616592629.370816]: trying /dev/ttyACM0
[INFO] [1616592629.637480]: found my port: 0x6a27
Device information for device 0x6a27
- Firmware version 2.0
[INFO] [1616592629.641910]: 0x6a0f
[INFO] [1616592629.645327]: 0x6a02
[INFO] [1616592629.648205]: 0x6a3c
- ID: 0x6A0F, flag: 1, X: 0, Y: 0, Z: 800
- ID: 0x6A02, flag: 1, X: 1000, Y: 0, Z: 800
- ID: 0x6A3C, flag: 1, X: 1000, Y: 1000, Z: 800
```

If has position message is shown , then the four sensors work .

```
21:29
/home/austin/Test/src/uwb_test/launch/localize.launch http://192.168.50.195:11311
/home/austin/Test/src/uwb_test/launch/localize.launch http://192.168.50.195:11311 105x52
('Translation:', 'X: -789, Y: -941, Z: 781')
('Translation:', 'X: -793, Y: -943, Z: 780')
('Translation:', 'X: -809, Y: -926, Z: 783')
('Translation:', 'X: -812, Y: -921, Z: 783')
('Translation:', 'X: -805, Y: -919, Z: 783')
('Translation:', 'X: -806, Y: -921, Z: 781')
('Translation:', 'X: -814, Y: -916, Z: 757')
('Translation:', 'X: -810, Y: -916, Z: 761')
('Translation:', 'X: -769, Y: -951, Z: 755')
('Translation:', 'X: -607, Y: -997, Z: 639')
('Translation:', 'X: -594, Y: -1008, Z: 619')
('Translation:', 'X: -590, Y: -985, Z: 547')
('Translation:', 'X: -589, Y: -983, Z: 520')
('Translation:', 'X: -551, Y: -1003, Z: 483')
('Translation:', 'X: -531, Y: -996, Z: 434')
('Translation:', 'X: -497, Y: -994, Z: 356')
('Translation:', 'X: -467, Y: -965, Z: 274')
('Translation:', 'X: -544, Y: -837, Z: 277')
('Translation:', 'X: -534, Y: -790, Z: 177')
('Translation:', 'X: -667, Y: -712, Z: 192')
('Translation:', 'X: -664, Y: -675, Z: 122')
('Translation:', 'X: -654, Y: -679, Z: 136')
('Translation:', 'X: -648, Y: -664, Z: 163')
('Translation:', 'X: -660, Y: -614, Z: 116')
('Translation:', 'X: -688, Y: -576, Z: 86')
```

If shown like below (that means the num of anchors is fewer than 3 , because it needs at least 3 anchors to do 3D positioning), it may have some sensors broken , then random change one of the sensors and retry , just do the cross testing .

```
21:23 /home/austin/Test/src/uwb_test/launch/localize.launch http://192.168.50.195:11311
/home/austin/Test/src/uwb_test/launch/localize.launch http://192.168.50.195:11311 105x52
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
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ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
ERROR 0x0A: Not enough anchors available for positioning
```

If shown like below , the tag may be broken .

```
22:08 /home/austin/Test/src/uwb_test/launch/localize.launch http://192.168.50.195:11311
/home/austin/Test/src/uwb_test/launch/localize.launch http://192.168.50.195:11311 105x52
austin@austin:~/Test$ roslaunch uwb_test localize.launch
... logging to /home/austin/.ros/log/5446e95c-8caa-11eb-94c4-309c23e5f49f/roslaunch-austin-31369.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://192.168.50.195:42459/

SUMMARY
=====

PARAMETERS
* /0x6a27/localize/anchors: [{'pz': 800, 'px'...
* /0x6a27/localize/tag_id: 0x6a27
* /rostdistro: melodic
* /rosversion: 1.14.9

NODES
/
  pozyx_tf_static (tf/static_transform_publisher)
  /0x6a27/
    localize (uwb_test/pozyx_node.py)
    pose_visualizer (uwb_test/pose_visualization.py)

auto-starting new master
process[roslaunch]: started with pid [31383]
ROS_MASTER_URI=http://192.168.50.195:11311

setting /run_id to 5446e95c-8caa-11eb-94c4-309c23e5f49f
process[rosout-1]: started with pid [31394]
started core service [/rosout]
process[0x6a27/localize-2]: started with pid [31397]
process[pozyx_tf_static-3]: started with pid [31401]
process[0x6a27/pose_visualizer-4]: started with pid [31403]
(0.0, 0.0, 0.8)
(1.0, 0.0, 0.8)
(1.0, 1.0, 0.8)
[{'pz': 800, 'px': 0, 'py': 0, 'anchor_id': 27151}, {'pz': 800, 'px': 1000, 'py': 0, 'anchor_id': 27138},
 {'pz': 800, 'px': 1000, 'py': 1000, 'anchor_id': 27196}]
[INFO] [1616594876.313401]: my id: 0x6a27
[FATAL] [1616594876.320260]: no device attached
Traceback (most recent call last):
  File "/home/austin/Test/src/uwb_test/src/pozyx_node.py", line 101, in <module>
    pozyx_node = pozyx_node()
  File "/home/austin/Test/src/uwb_test/src/pozyx_node.py", line 27, in __init__
    raise RuntimeError("No pozyx device attached")
RuntimeError: No pozyx device attached
[0x6a27/localize-2] process has died [pid 31397, exit code 1, cmd /home/austin/Test/src/uwb_test/src/pozyx_node.py __name:=localize __log:=/home/austin/.ros/log/5446e95c-8caa-11eb-94c4-309c23e5f49f/0x6a27-localize-2.log].
log file: /home/austin/.ros/log/5446e95c-8caa-11eb-94c4-309c23e5f49f/0x6a27-localize-2*.log
```

