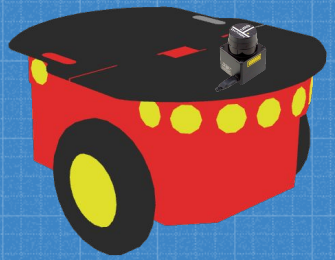

TÉCNICO LISBOA

Week 4

Pioneer 3DX - SLAM

(Group 17)

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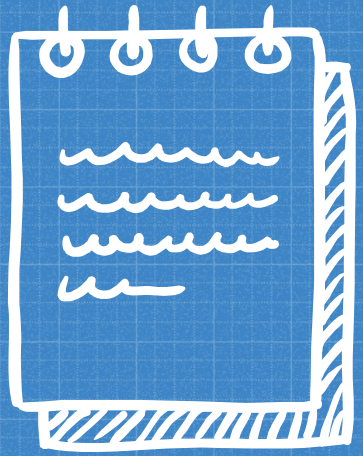
Plans for last week:

1. Use the real Pioneer and Hokuyo laser and check connections.
2. Understand which landmarks are more relevant and how to use them.
3. Record data from simulated lasers and then use it on a new version of a script.
4. Record some bags of the laser /scan topic.



Improved our odometry model

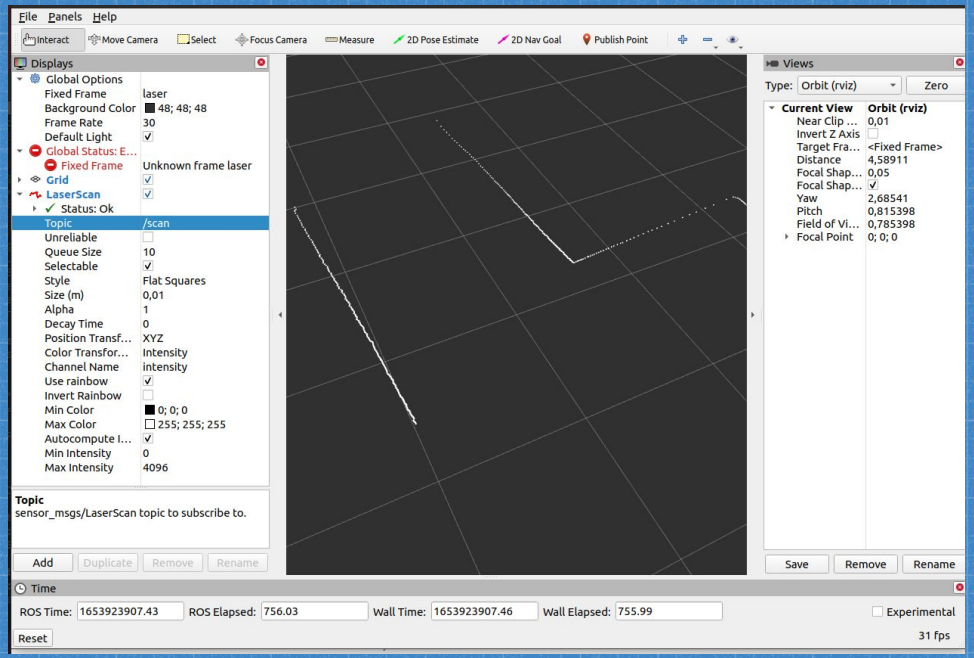
- Decoupled our previous prediction functions to work with distance variables;
- Implementation of this model in *ROS* and tested it with ou simulated world.

Next steps:

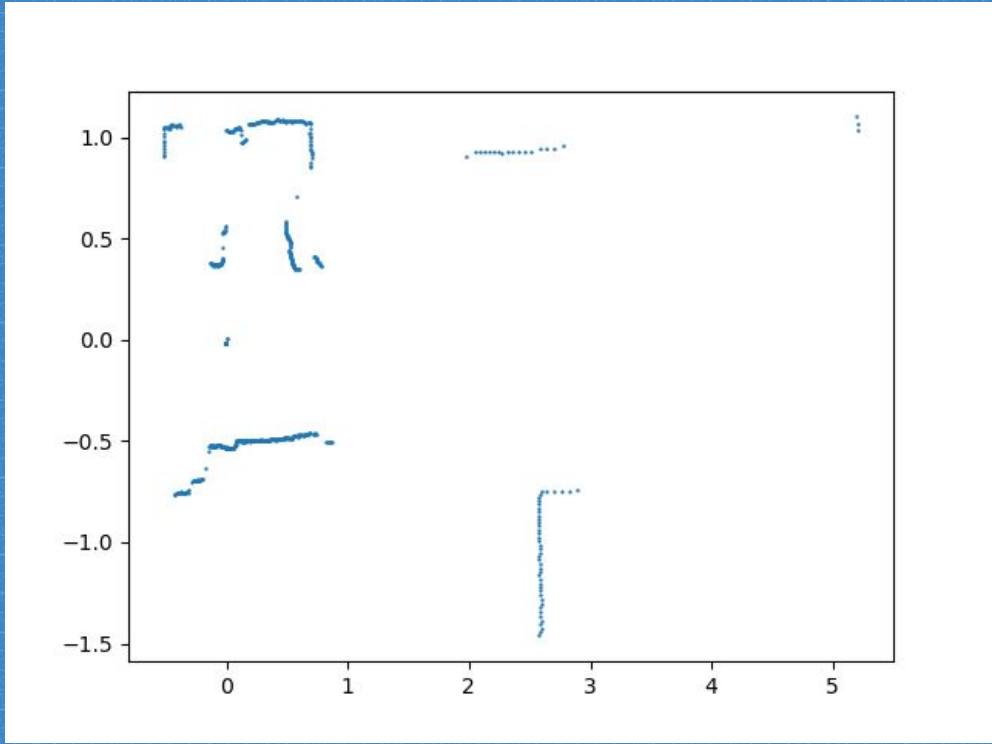
- Quantify the errors to make sure it is working fine;
- Verify if the covariance matrix determinant is increasing as expected.

On the Lab

- Tested the connection between Pioneer and Hokuyo Laser;
- Recorded our first bag files from the /scan topic;
- Rviz.



Now in a GIF:



Sorry for the changing scale.

Landmarks: Points vs Lines vs Corners (using a laser)

Points:

Pros

- Isolated;
- Not so susceptible to noise and fluctuations.

Cons

- Isolated;
- Does not give a general idea of the environment.

Lines:

Pros

- Gives a broader idea of the space around the robot;
- Appropriate for our specific problem, and for indoor spaces in general (linear walls).

Cons

- It may behave unexpectedly in other environments, more irregular;
- Susceptible to noise.

Corners:

Pros

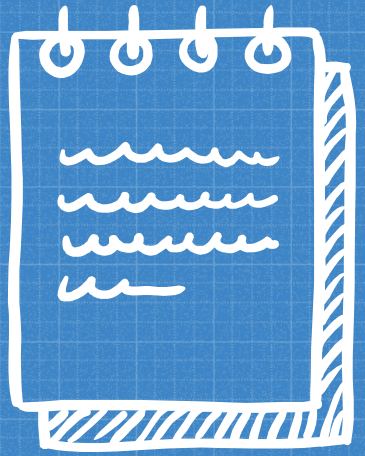
- Only 2 parameters per landmark

Cons

- Susceptible to noise;
- Requires extra analysis: what points are connected between each other.

Plans for next week:

1. Retrieve and match the landmarks from our maps;
2. Implement and verify the update step;
3. Verify the prediction step.



Thank you!

ANY COMMENTS/QUESTIONS/Suggestions (please)?

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