241110 Linefinder

```
ros@sigyn7900:~$ ros2 launch line_finder line_finder.launch.py
[INFO] [launch]: All log files can be found below /home/ros/.ros/log/2024-
11-10-19-54-19-319020-sigyn7900-5868
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [lf-1]: process started with pid [5871]
[lf-1] [INFO] [1731297259.725347787] [LineExtractionROS]: bearing_std_dev:
0.001000
[lf-1] [INFO] [1731297259.725380035] [LineExtractionROS]: frame_id:
base_link
[lf-1] [INFO] [1731297259.725382649] [LineExtractionROS]:
least_sq_angle_thresh: 0.000100
[lf-1] [INFO] [1731297259.725384994] [LineExtractionROS]:
least_sq_radius_thresh: 0.000100
[lf-1] [INFO] [1731297259.725387328] [LineExtractionROS]: max_line_gap:
0.400000
[lf-1] [INFO] [1731297259.725389542] [LineExtractionROS]: max_range:
20.000000
[lf-1] [INFO] [1731297259.725392006] [LineExtractionROS]: min_line_length:
0.500000
[lf-1] [INFO] [1731297259.725394090] [LineExtractionROS]: min_line_points:
9
[lf-1] [INFO] [1731297259.725396204] [LineExtractionROS]: min_range:
0.400000
[lf-1] [INFO] [1731297259.725398247] [LineExtractionROS]: min_split_dist:
0.050000
[lf-1] [INFO] [1731297259.725400191] [LineExtractionROS]: outlier_dist:
0.050000
[lf-1] [INFO] [1731297259.725402104] [LineExtractionROS]: publish_markers:
True
[lf-1] [INFO] [1731297259.725403937] [LineExtractionROS]: range_std_dev:
0.020000
[lf-1] [INFO] [1731297259.725405901] [LineExtractionROS]: scan_topic: scan
```

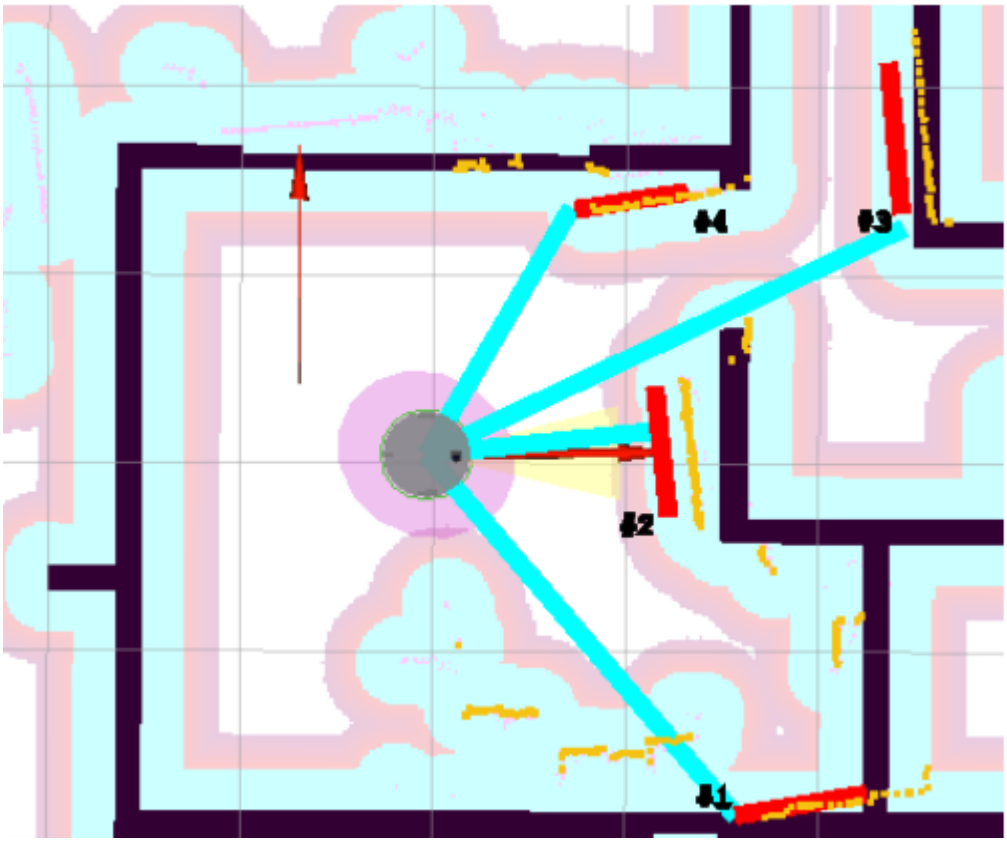
Room corners

corner	x	y
lower-left	7.51	0.155
upper-left	7.51	3.56
upper-right	10.5	3.53
lower-right	10.5	0.155

(not including closet area)

/line_segments

Lines 1-4



line#	radius	angle	start_x	start_y	end_x	end_y
1	2.1458	-1.4208	1.6294	-1.9240	2.2307	-1.8332
2	1.2184	0.0882	1.2538	-0.3440	1.1921	0.3512
3	2.5796	0.0856	2.4843	1.2211	2.4165	2.0117
4	1.2035	1.6928	1.4487	1.3903	0.7851	1.3088

Line Segment Data [Lines 1-4]

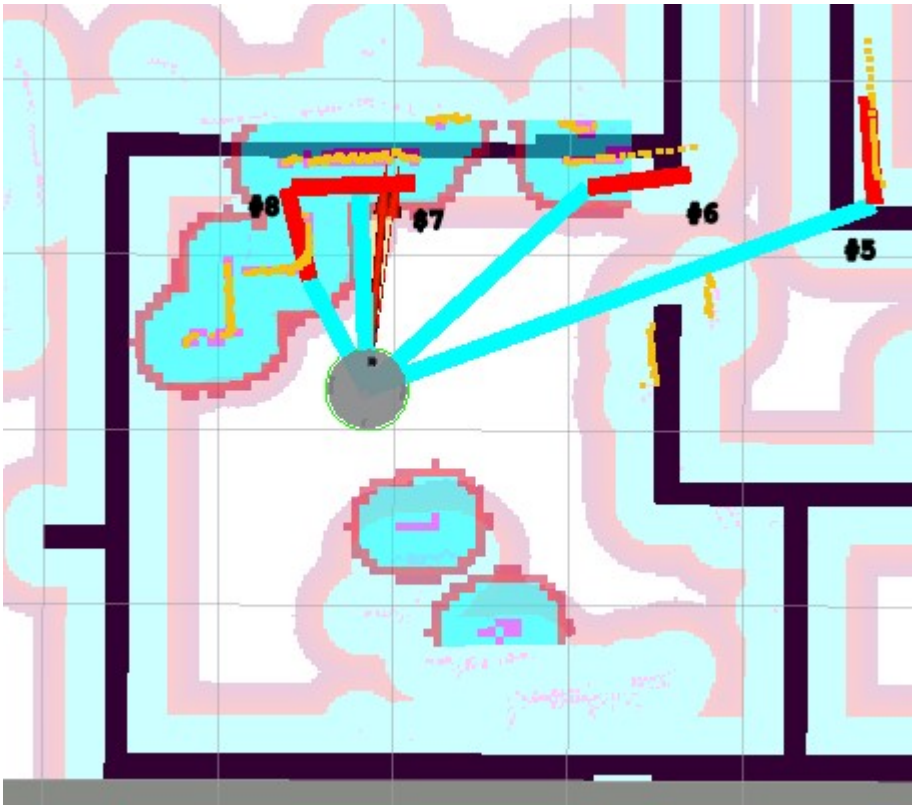
▶ topic data to match table


```
header:
  stamp:
    sec: 1731297807
    nanosec: 310063609
  frame_id: base_link
line_segments:
- radius: 2.1458699703216553
  angle: -1.420866847038269
  covariance:
  - 1.9729275679272688e-05
  - -1.1918309603479459e-05
```

```
    - -1.9183096034794 59e-05
    - 7.298461178386535e-06
    start:
    - 1.6294203545637538
    - -1.9240709449528208
    end:
    - 2.230796309594858
    - -1.8332252501536457
  - radius: 1.218483805656433
    angle: 0.08828162401914597
    covariance:
    - 9.653396027243751e-06
    - 1.8190248807880376e-05
    - 1.8190248807880376e-05
    - 0.00017191915647513494
    start:
    - 1.2537025326029294
    - -0.3440791759252431
    end:
    - 1.1921550098627762
    - 0.3512812504865298
  - radius: 2.579677104949951
    angle: 0.0856236070394516
    covariance:
    - 1.7251915098513372e-05
    - -1.1945000145414815e-05
    - -1.1945000145414815e-05
    - 8.518800953433596e-06
    start:
    - 2.4843494398054466
    - 1.2211211471218202
    end:
    - 2.4164924712619578
    - 2.011686507466736
  - radius: 1.2035443782806396
    angle: 1.6928415298461914
    covariance:
    - 9.616874214378782e-06
    - 7.331284897485949e-06
    - 7.331284897485949e-06
    - 5.729877567940279e-06
    start:
    - 1.4487406154402493
    - 1.3902587609151182
    end:
    - 0.7850872338081254
    - 1.308858485482569
  - radius: 1.53309166431427
    angle: 1.571770429611206
    covariance:
    - 4.256913998302961e-05
    - 0.00011316331143330525
    - 0.00011316331143330525
    - 0.0003853242751400809
```

```
  start:
  - 0.6775138913609485
  - 1.5337523527000416
  end:
  - 0.14530837367083127
  - 1.53323391269911
```

Lines 5-8



line#	radius	angle	start_x	start_y	end_x	end_y
5	2.9939	-1.3857	1.2568	-2.8106	1.9011	-2.6900
6	0.9785	0.2195	1.3961	-1.7636	1.2547	-1.1299
7	1.1628	0.1217	1.1943	-0.1862	1.1178	0.4390
8	1.1063	0.5420	1.1063	0.5420	0.5643	0.3889

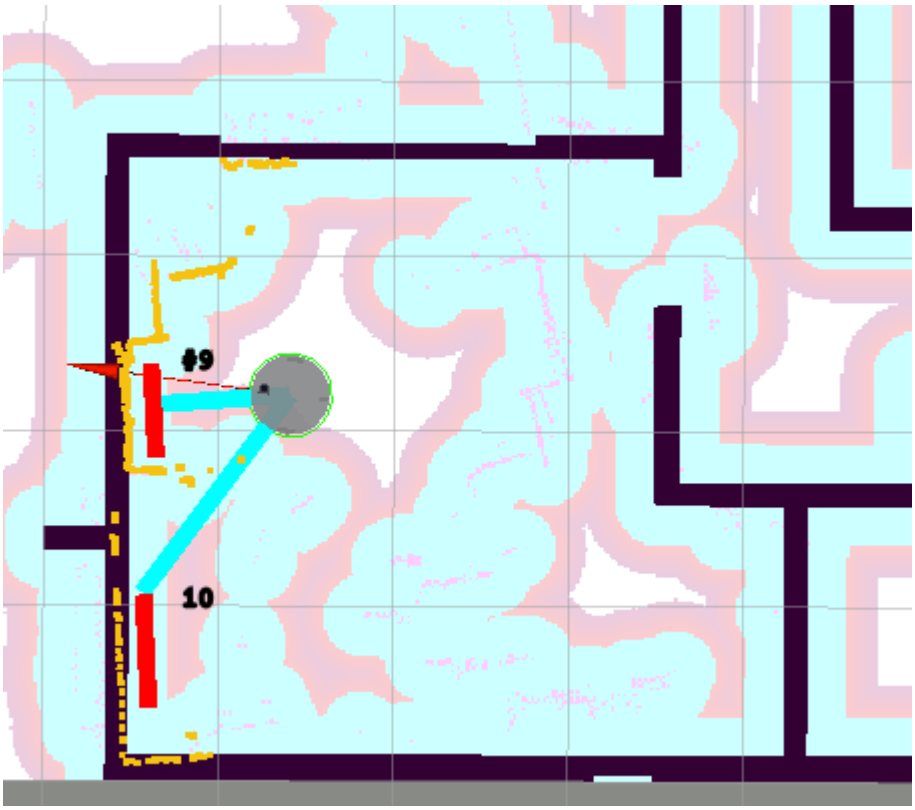
Line Segment Data [Lines 5-9]

▶ topic data to match table

```
header:
  stamp:
    sec: 1731298943
    nanosec: 309821887
  frame_id: base_link
line_segments:
```

```
  - radius: 2.9939589500427246
    angle: -1.3856724500656128
    covariance:
    - 2.540774519104498e-05
    - -2.312734115665261e-05
    - -2.312734115665261e-05
    - 2.1800444675049303e-05
    start:
    - 1.2567848625299218
    - -2.8106489229208624
    end:
    - 1.901055836874385
    - -2.689997535854568
  - radius: 0.9785247445106506
    angle: 0.21951071918010712
    covariance:
    - 8.043113636205821e-06
    - 4.662219890767996e-06
    - 4.662219890767996e-06
    - 2.7400737583088343e-06
    start:
    - 1.3960597615672092
    - -1.7636353804792446
    end:
    - 1.2546780910992883
    - -1.1299373320134127
  - radius: 0.22083692252635956
    angle: 1.846121907234192
    covariance:
    - 2.5059073030361064e-06
    - 2.9488013963177136e-06
    - 2.9488013963177136e-06
    - 3.621011101489202e-06
    start:
    - 1.1062934982034736
    - 0.542008032593687
    end:
    - 0.5642952531170367
    - 0.38889341445790165
```

Lines 9-10



line#	radius	angle	start_x	start_y	end_x	end_y
9	0.7853	0.1961	0.8128	-0.0617	0.7116	0.4478
10	0.8881	0.1761	0.6804	1.2454	0.5647	1.8959

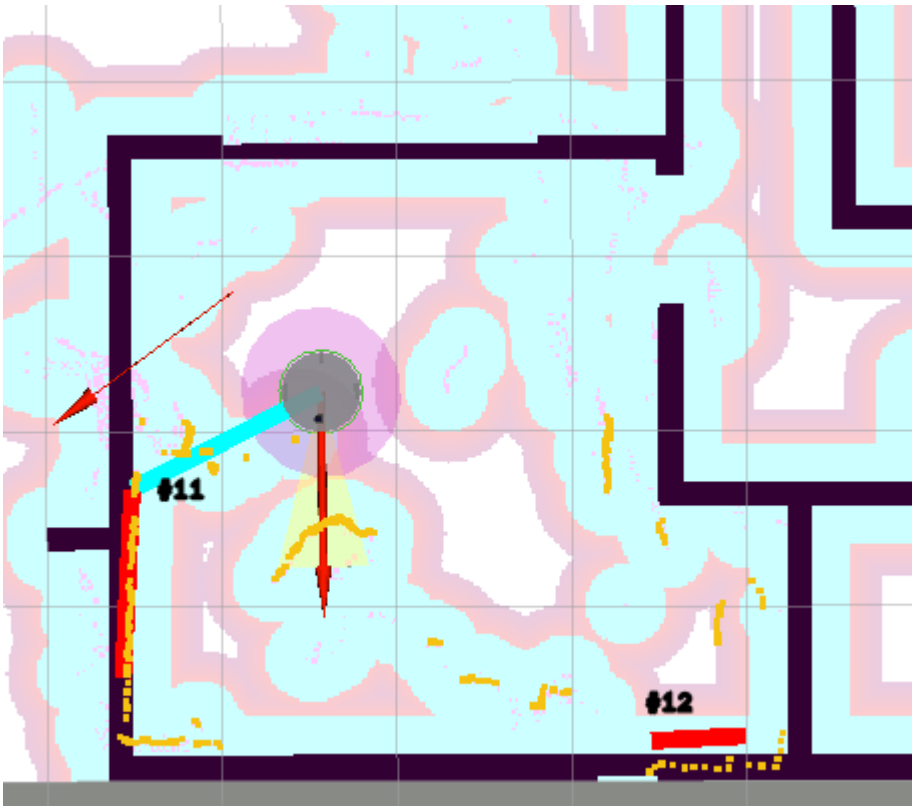
Line Segment Data [Lines 9-10]

▶ topic data to match table

```
header:
  stamp:
    sec: 1731300904
    nanosec: 5518646
  frame_id: base_link
line_segments:
- radius: 0.7852584719657898
  angle: 0.1960650533437729
  covariance:
  - 8.190411277388229e-06
  - -1.0550132576650183e-05
  - -1.0550132576650183e-05
  - 0.0003248916215273651
  start:
  - 0.8128473907688508
  - -0.061676902988323415
  end:
  - 0.7116492675112557
  - 0.44783790816531677
- radius: 0.8881112933158875
```

```
    angle: 0.17610231041908264
    covariance:
    - 7.177821129194005e-06
    - -4.869043919293237e-06
    - -4.869043919293237e-06
    - 3.3676316832071296e-06
    start:
    - 0.6804435501251853
    - 1.2454312594436618
    end:
    - 0.5646937098911454
    - 1.895910038803841
```

Lines 11-12



line#	radius	angle	start_x	start_y	end_x	end_y
11	1.0506	-1.6302	0.5476	-1.0850	1.6074	-1.1480
12	2.0352	0.0149	2.0075	1.8769	1.9997	2.4022

Line Segment Data [Lines 11-12]

▶ topic data to match table

```
header:
  stamp:
    sec: 1731301714
```

```
    nanosec: 610407075
  frame_id: base_link
line_segments:
- radius: 1.0505529642105103
  angle: -1.6301807165145874
  covariance:
  - 5.6270473175723055e-06
  - -4.521922776098976e-06
  - -4.521922776098976e-06
  - 3.918528040586107e-06
  start:
  - 0.547586052020824
  - -1.084964395917353
  end:
  - 1.6073655621467373
  - -1.147972805943739
- radius: 2.0351946353912354
  angle: 0.014871446415781975
  covariance:
  - 1.981247065111853e-05
  - -9.34070486658777e-06
  - -9.34070486658777e-06
  - 4.432487131092105e-06
  start:
  - 2.007505572217503
  - 1.8768979168479734
  end:
  - 1.9996930674860152
  - 2.4021950877829905
```

To save this markdown file as a PDF, you can use a tool like Pandoc. Here are the steps:

1. Install Pandoc if you haven't already. You can install it using the following command:

```
sudo apt-get install pandoc
```

2. Navigate to the directory containing your markdown file:

```
cd /home/ros/sigyn_ws/src/laser_lines/notes/
```

3. Convert the markdown file to PDF using Pandoc:

```
pandoc note3.md -o note3.pdf
```

This will generate a `note3.pdf` file in the same directory.

Alternatively, you can use an online markdown to PDF converter or a markdown editor with built-in PDF export functionality.