




PROJECT PROGRESS



TEAM D
11/11/19



AGENDA

- Camera change
- Electrical design update
- Software progress
- Future work: Autonomous Navigation



Camera change



INTEL REAL SENSE SR300

- Intel Realsense R200 was showing poor results
- First tests demonstrated that the images provided from the R200 were noisy
- After creating a cloud map with Intel Realsense SR300 map cloud seemed to be clearer and less noisy.



Cloud Map using Intel Realsense R200



Loop closure detection

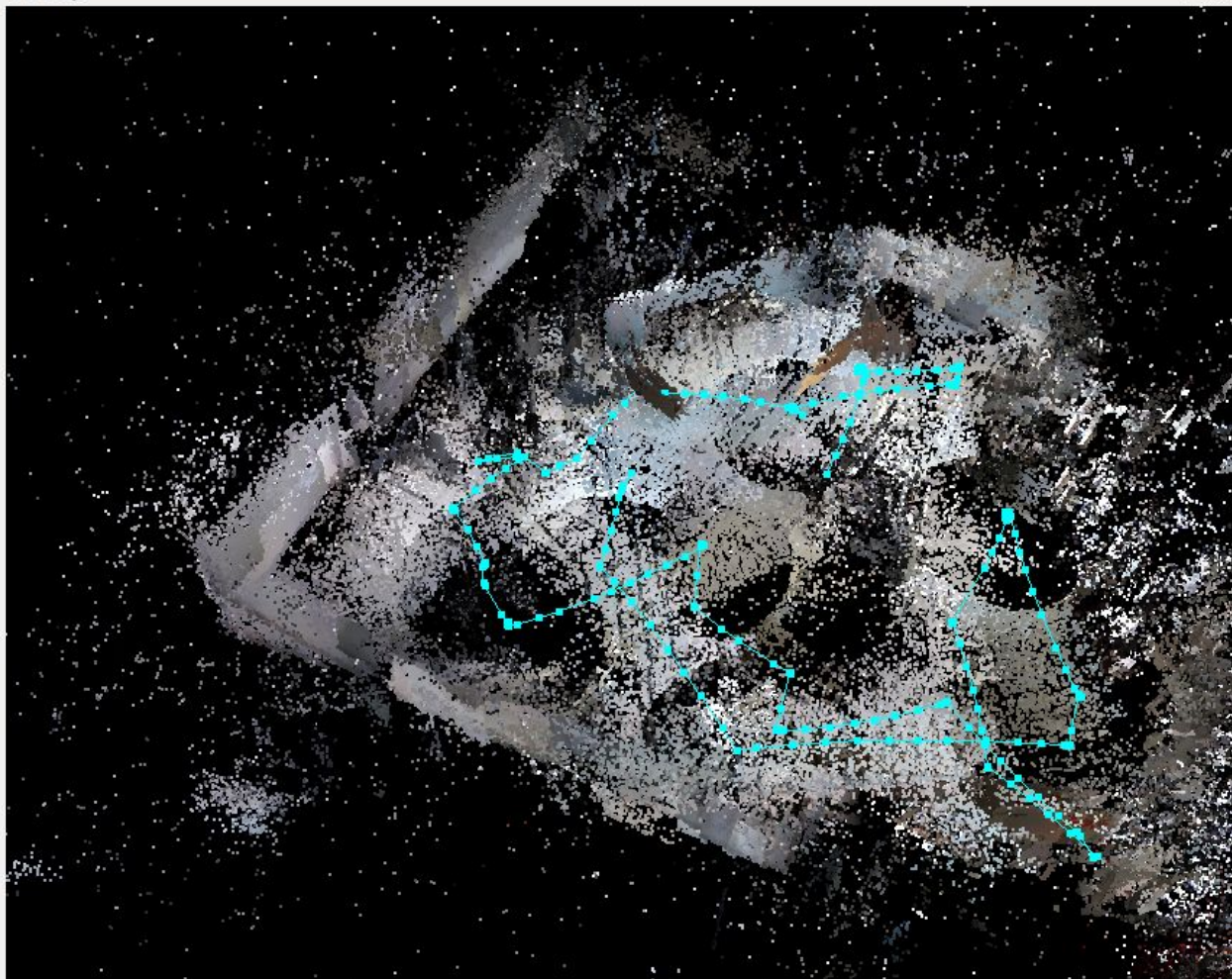
New ID = 531 [0]



Odometry



3D Map



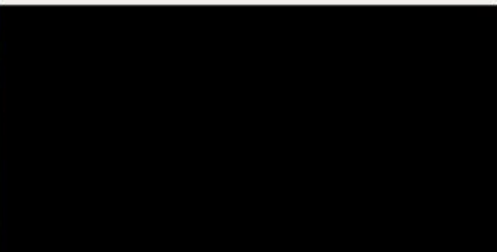


Cloud Map using Intel Realsense SR300



Loop closure detection

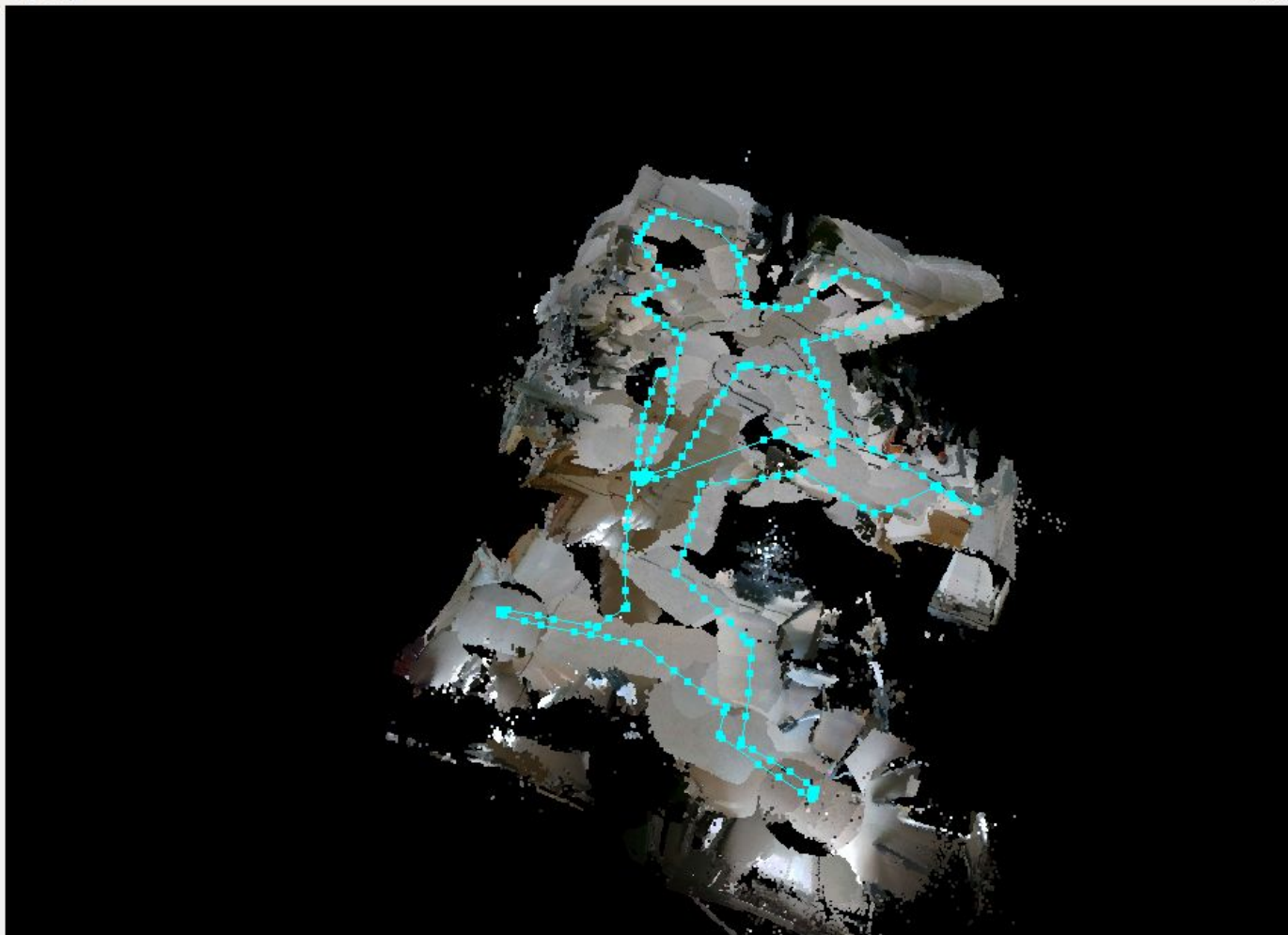
New ID = 677 [0]



Odometry



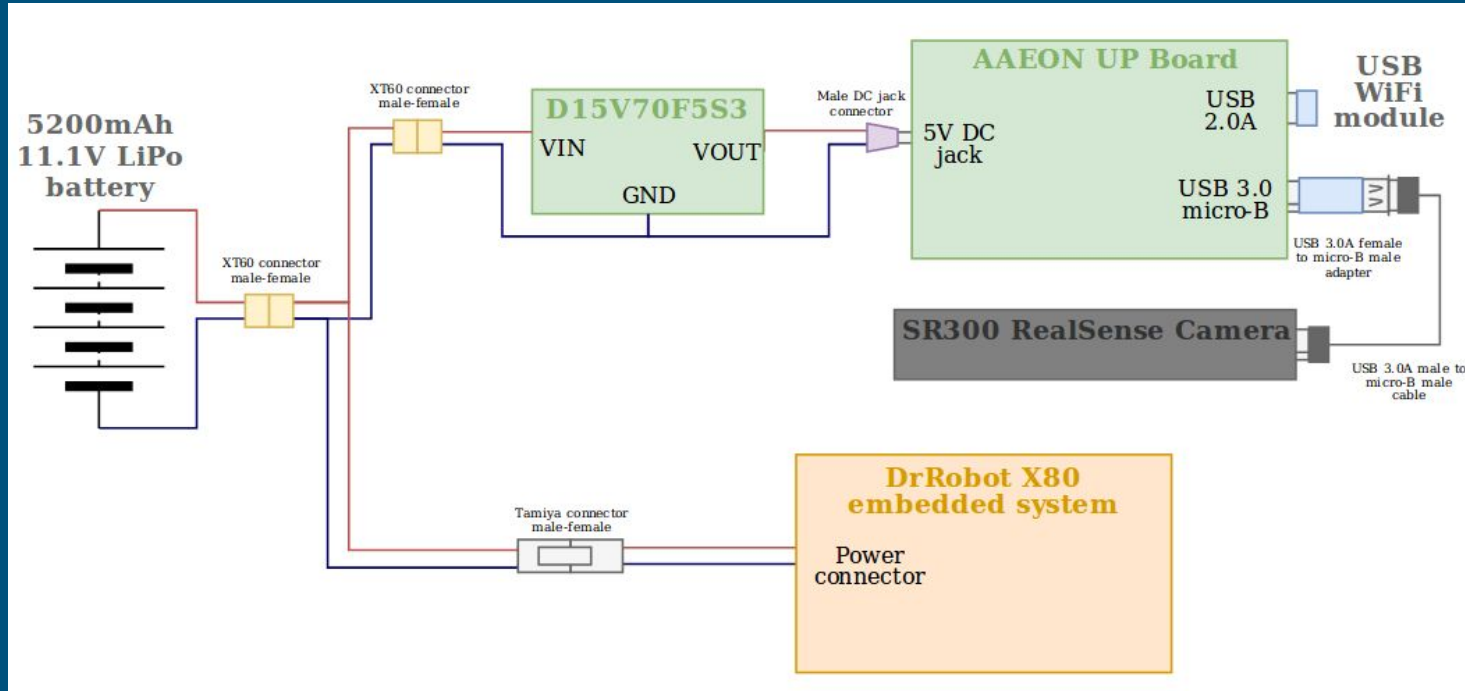
3D Map



Graph view

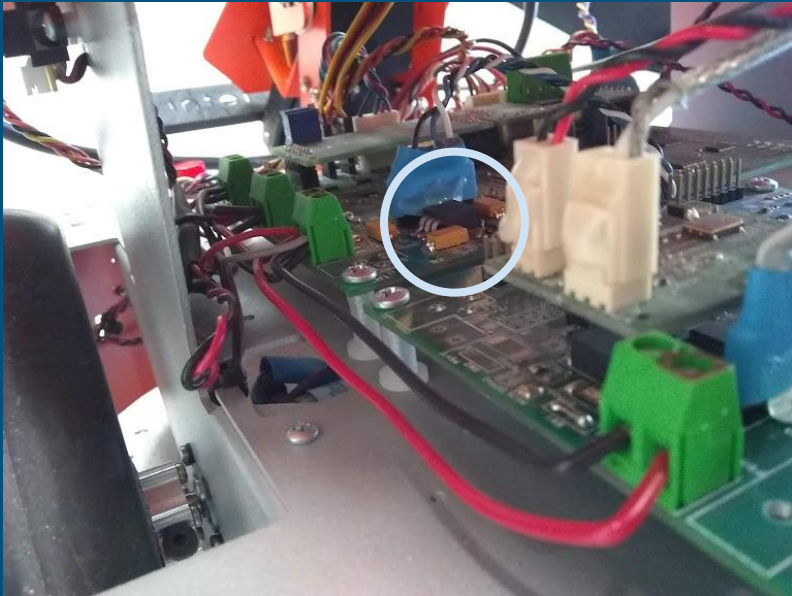
3D Map

Electrical design update



X80 voltage regulator was removed.

Electrical design update

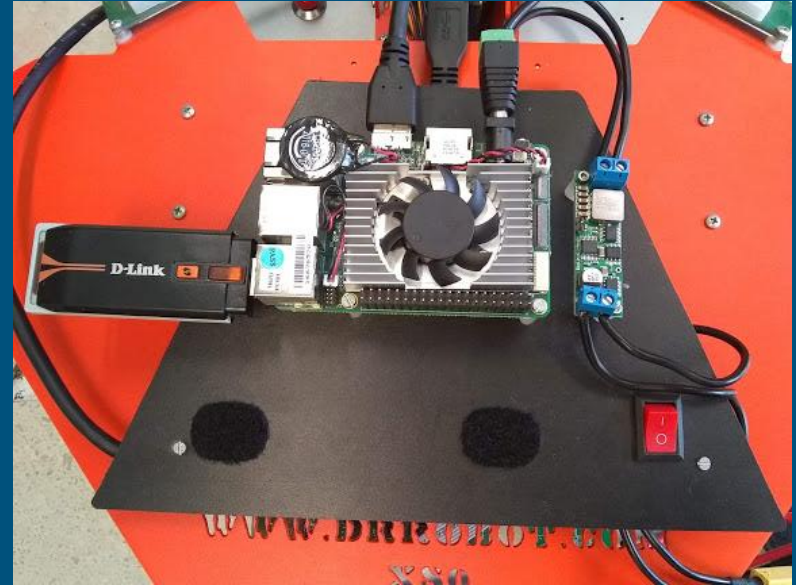
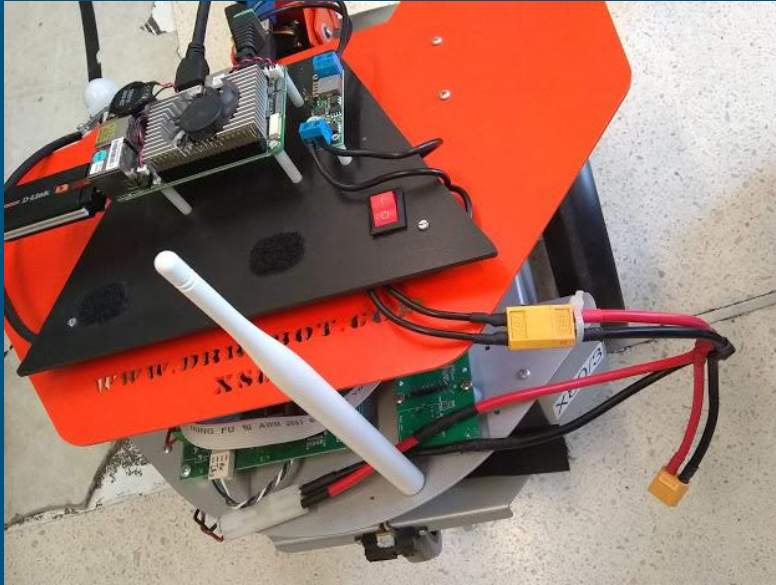


Embedded LM2940S linear regulator:

- 5V@1A output
- 6V - 26V input

Robot draws around 0.8 A

Electrical wiring implementation



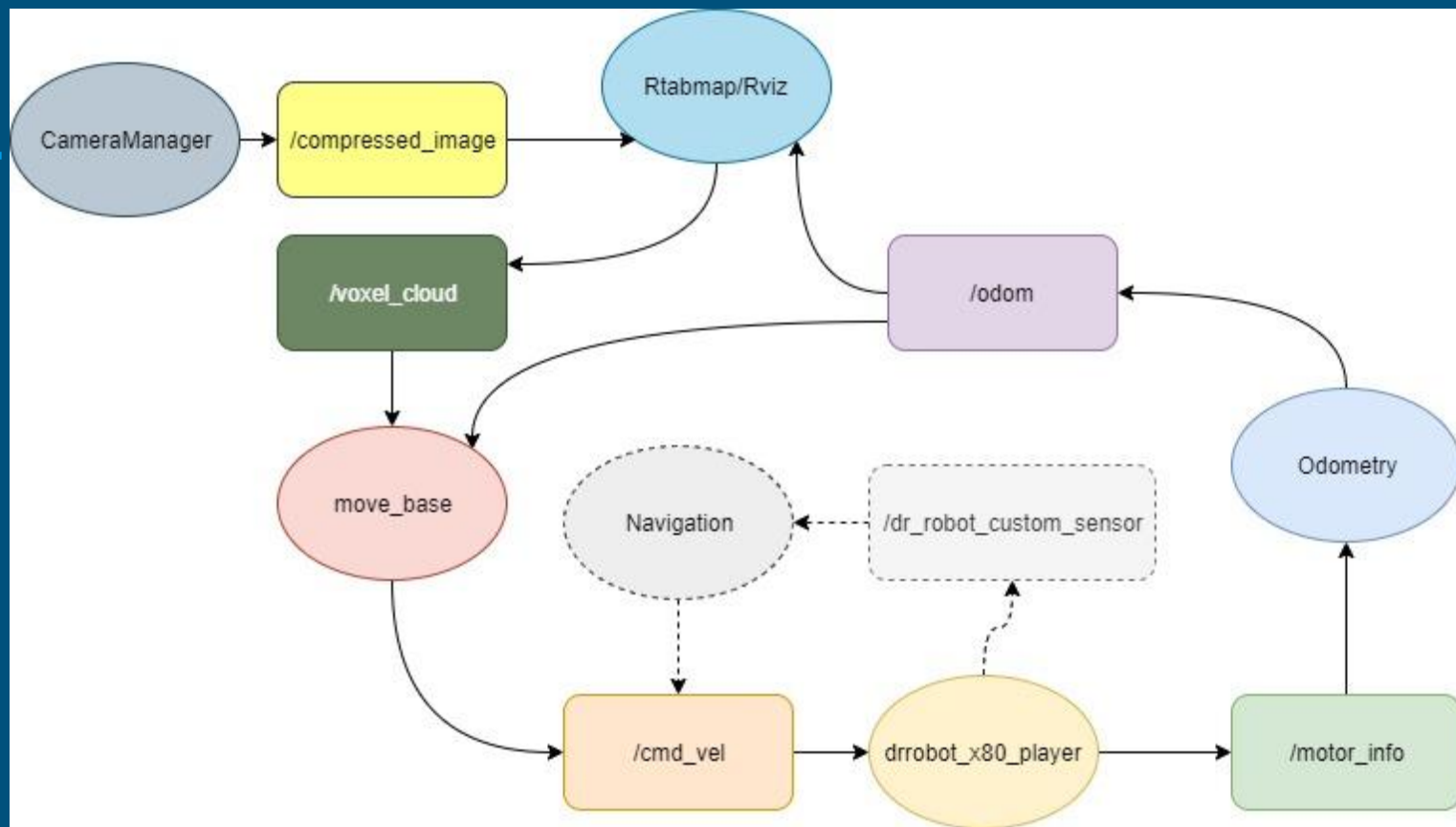
Electrical system testing

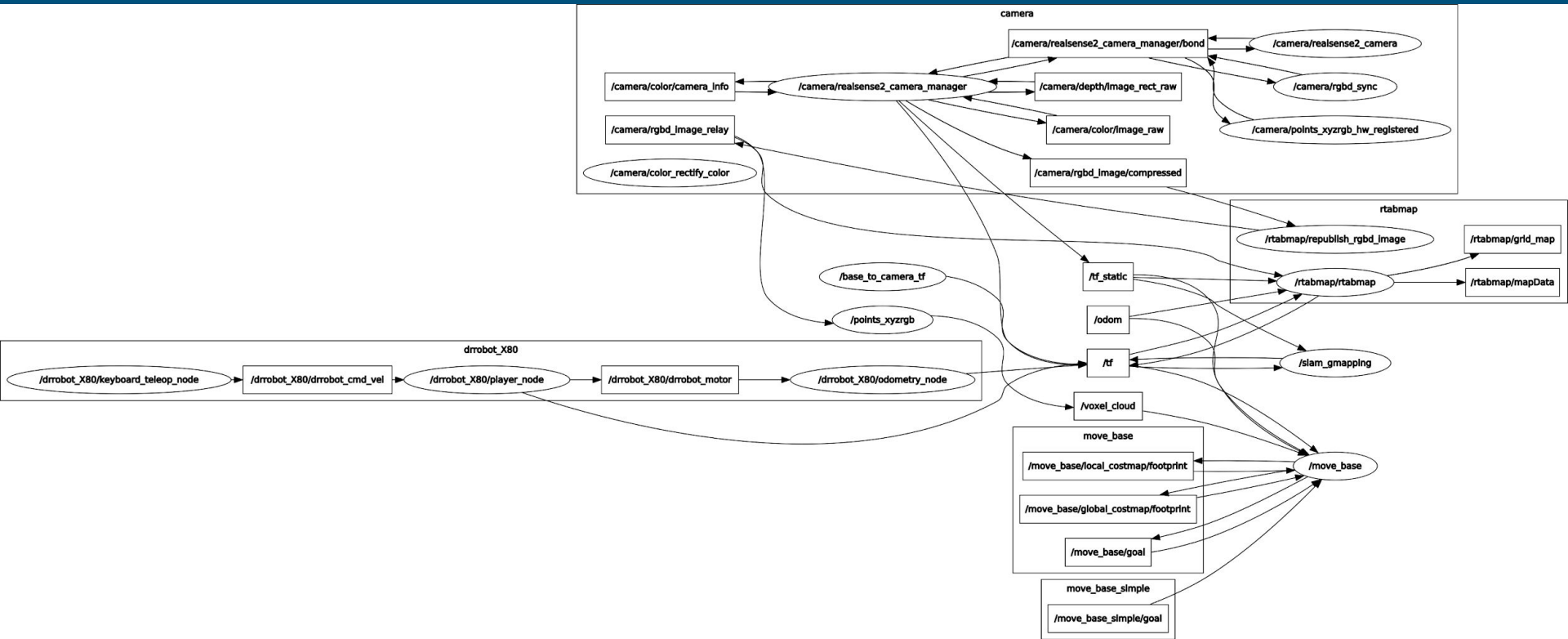


- Battery nominal voltage: 11.1 V
- Battery operating voltage range: 10.5V - 12.6V
- Total current draw: 2.2A
- Time of operation with one charge: 2 hours

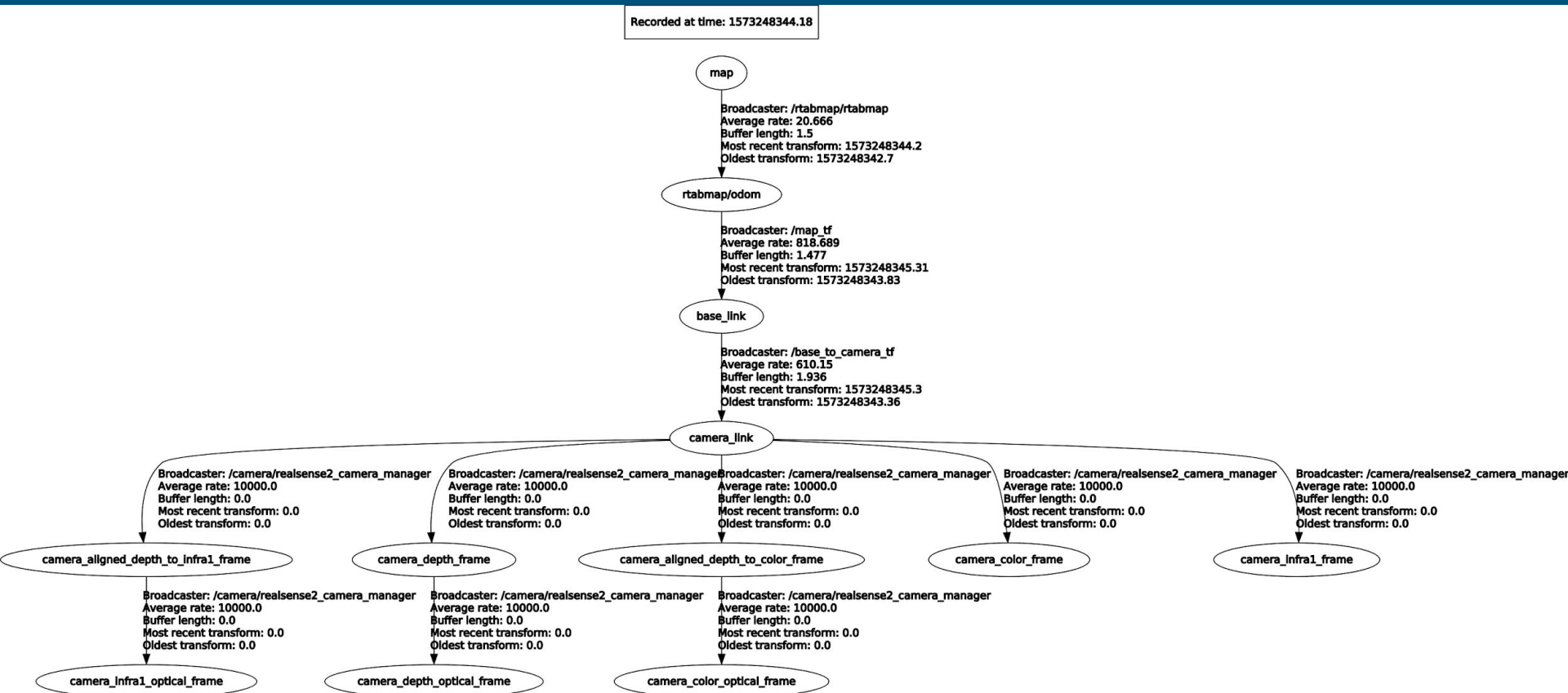
Software progress

- Odometry node using encoders
- RTAB-Map loop-closure detection
- Cloudmap reconstruction using cloudpoints
- Work on autonomous navigation using the navigation stack





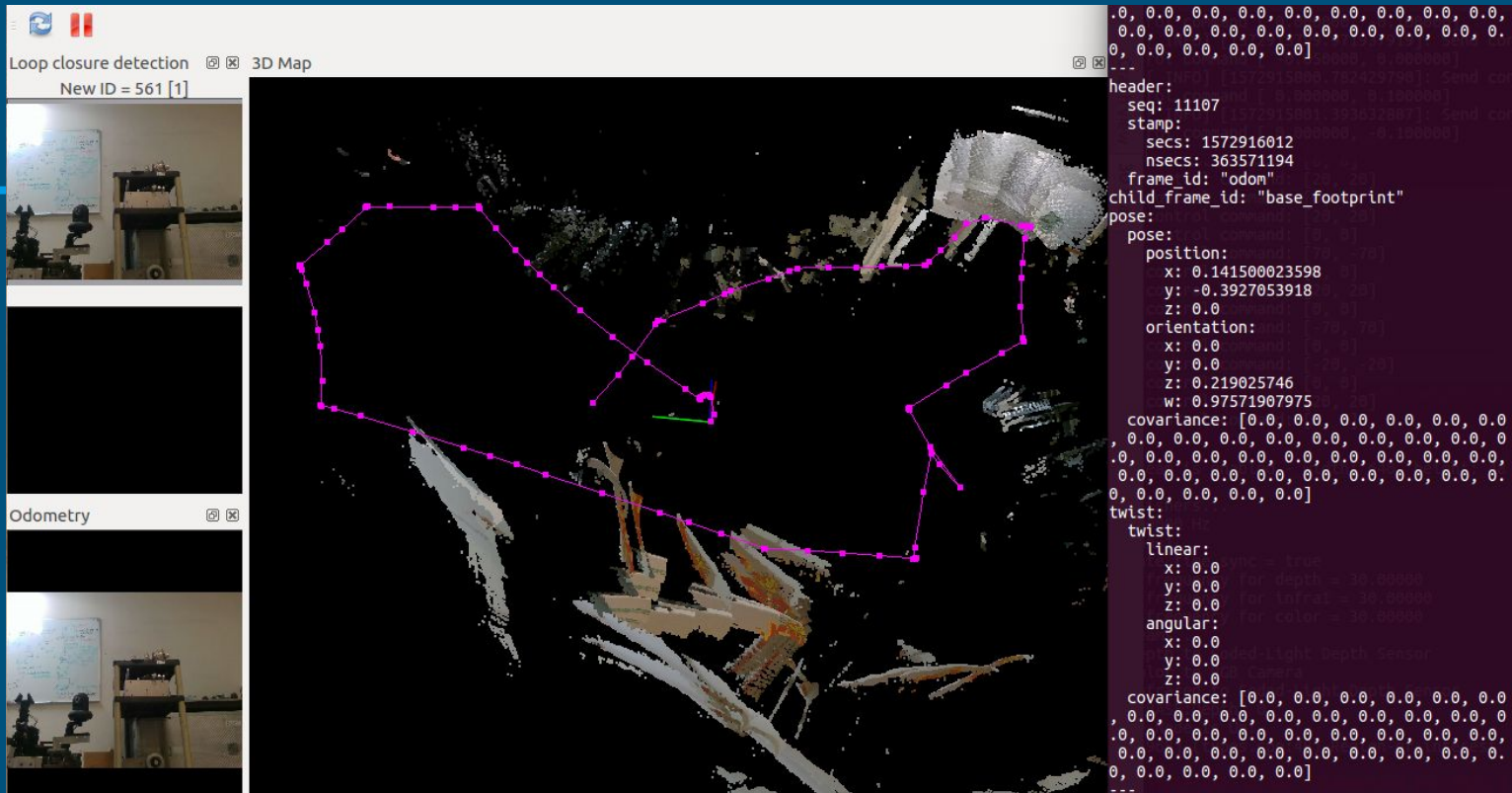
rqt_graph



rqt_tf_tree

Tf_ROS

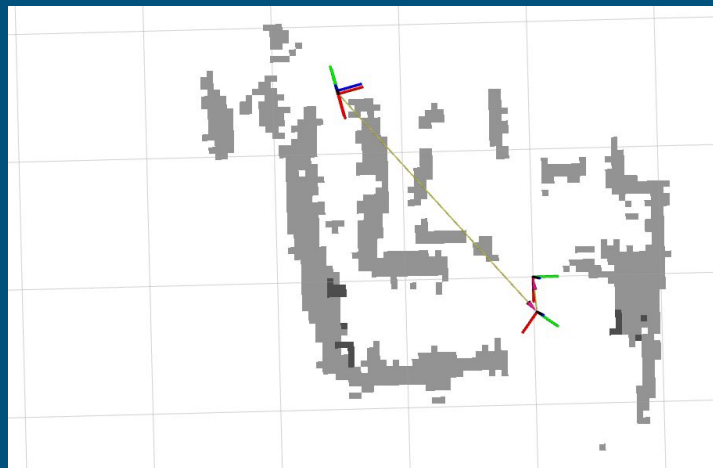
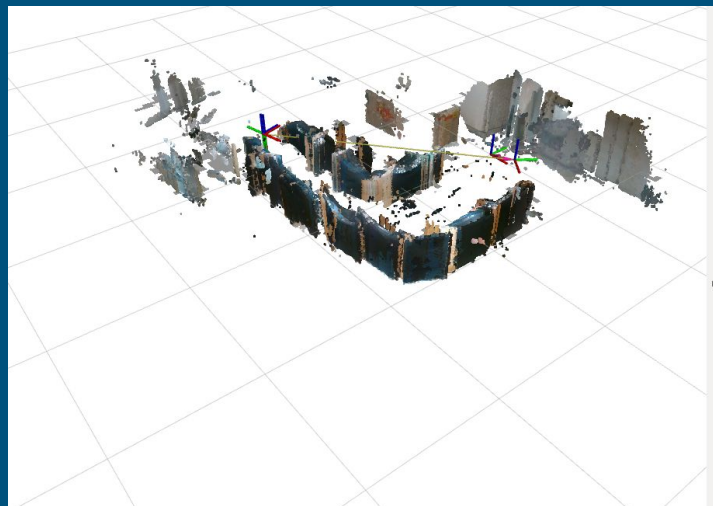
- tf maintains the relationship between coordinate frames in a tree structure buffered in time, and lets the user transform points, vectors, etc between any two coordinate frames at any desired point in time.
- Having a unified tree is basic to avoid delays and mis-communication between processes.

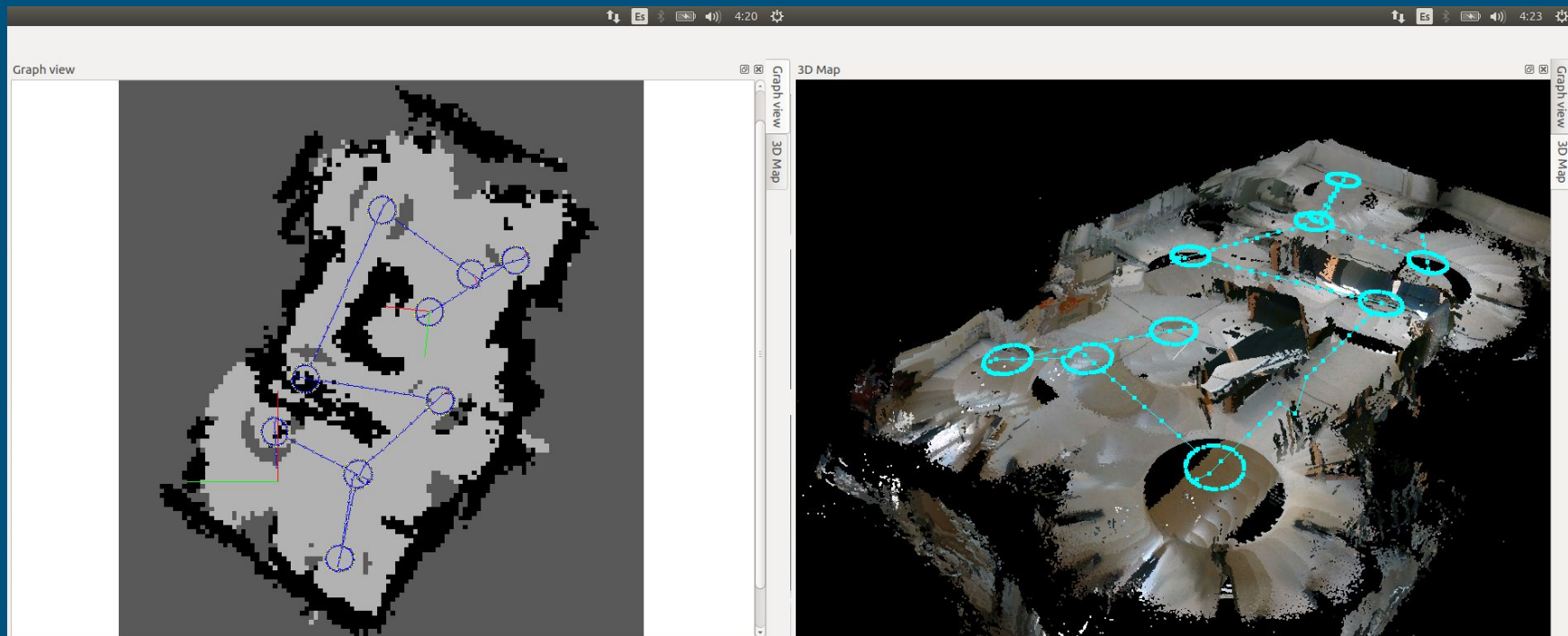


Odometry error test



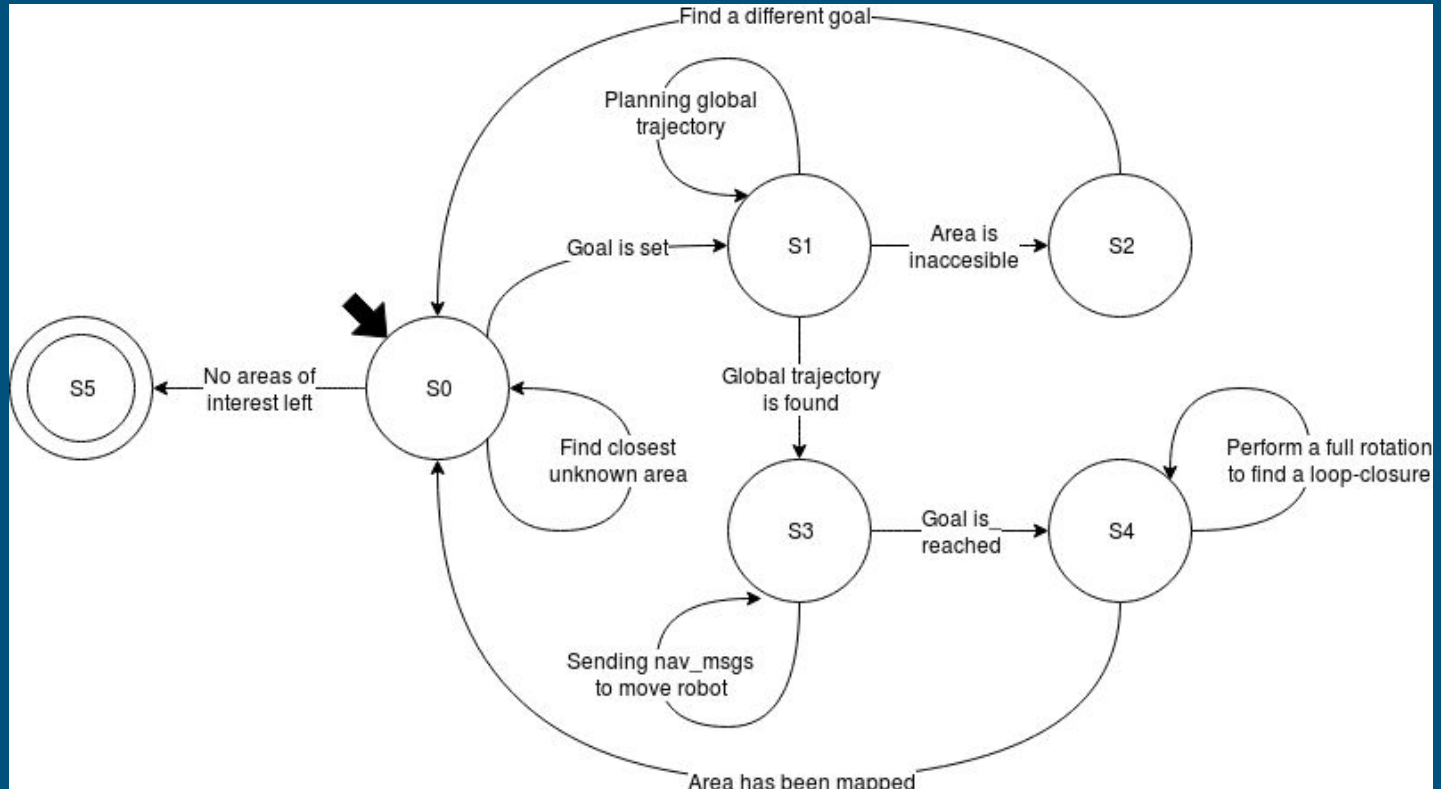
2d and 3d obstacle
detection





2d and 3d mapping

Future work: autonomous navigation



Local costmap test

