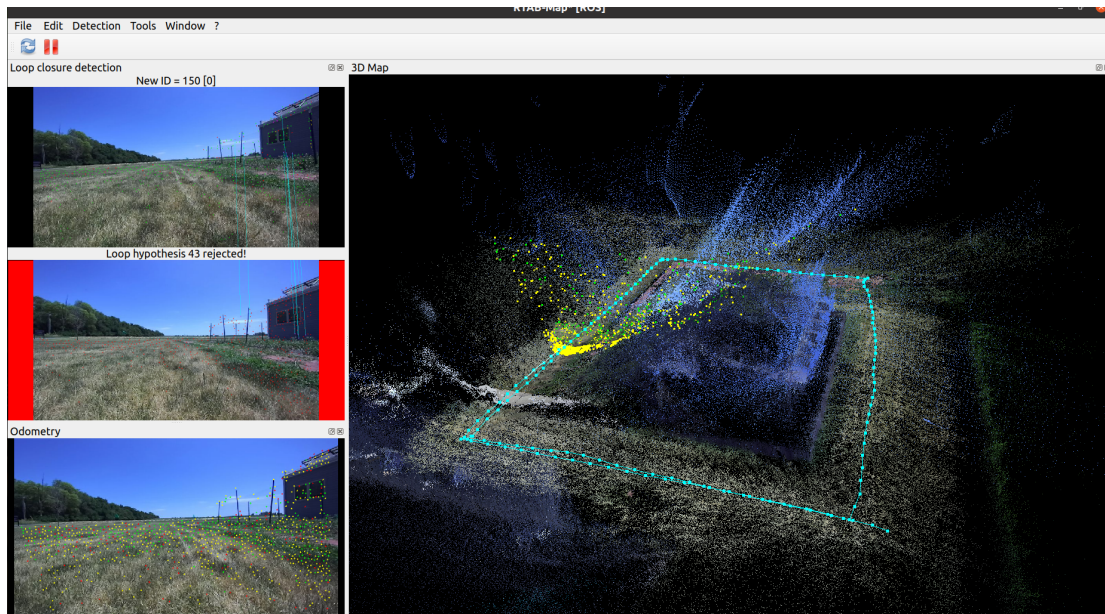


Final Project: RTAB SLAM

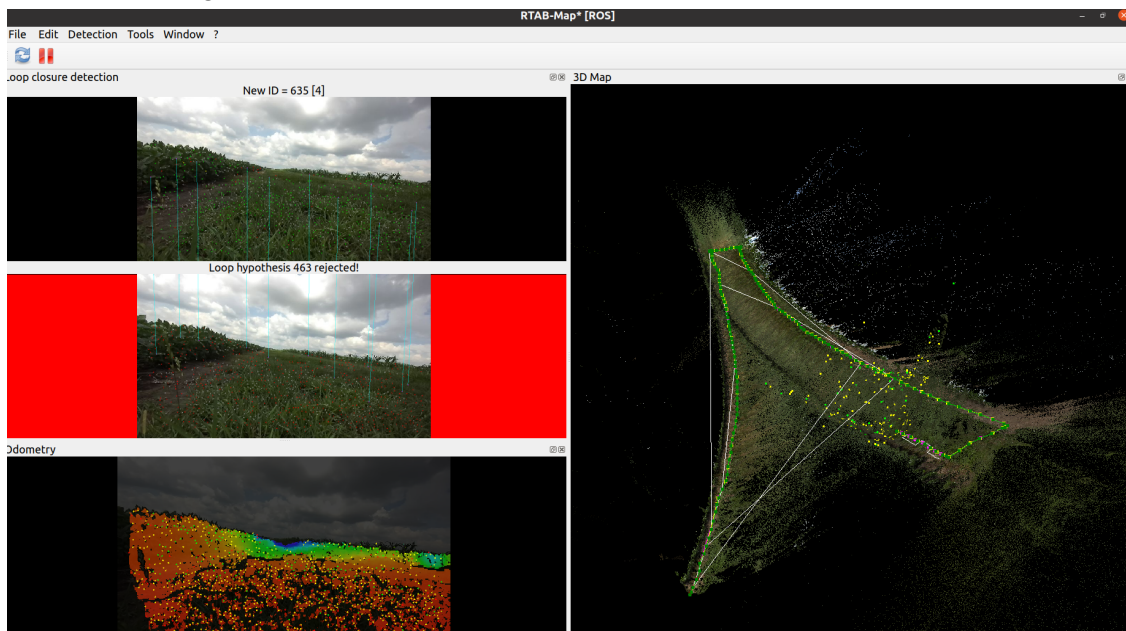
Name: Li-Kai Chuang

NetID: likaikc2

1. RTAB on rosbag1



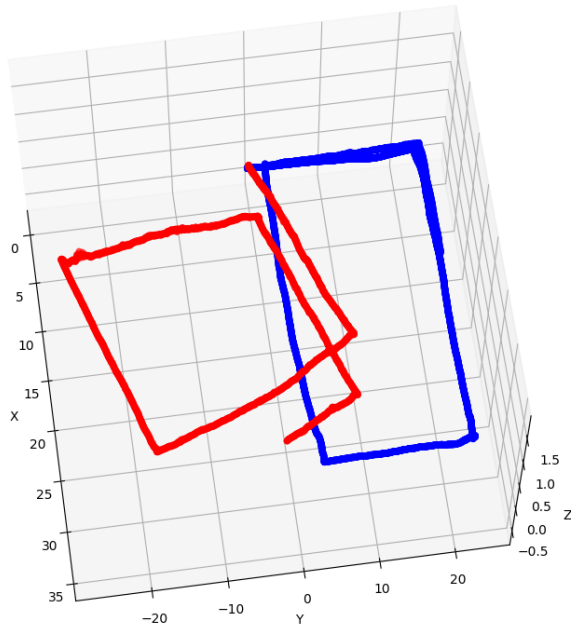
RTAB on rosbag2



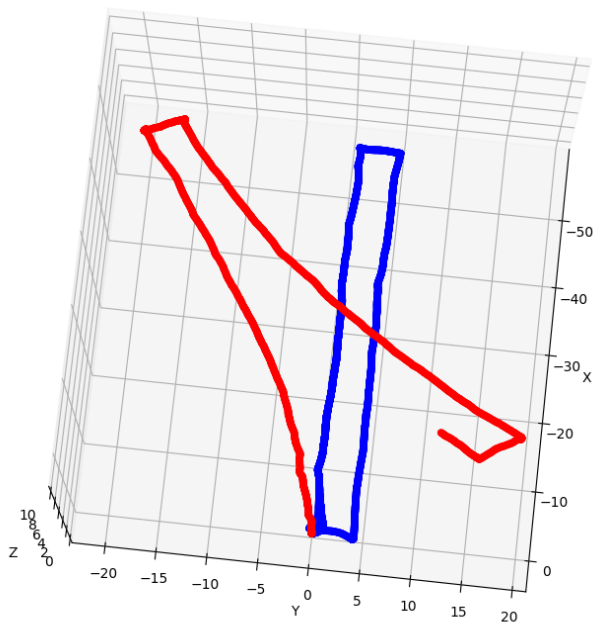
2. Compare the data recorded from my ROS node

Blue: ekf odom; Red: rtab odom

Rosbag1



Rosbag2



3. Compare the error & Discussions

The number of samples are different, so we first interpolate the rtab odom so that we can compute the corresponding errors.

RMSE for rosbag1: 23.422305039533995

RMSE for rosbag2: 58.48207032331352

We can obviously see that the estimated results do a pretty good job on odometry, where there's not much noise and the path looks continuous. However, the bad part is it gradually drifts away from the ground truth, which is usually hard to avoid. Something confusing me a little bit is RTAB should have loop closure to deal with this situation. I think a possible explanation about this is that the corn field the robot was walking on makes it harder to detect a good loop closure. As we all know, a bad loop closure can make the global estimation even worse, especially in an environment where the features are repeated.

As for the RMSE error, since the trajectories are way too far from the groundtruth, it's hard to get valuable information by observing the error. We can however observe the drifting by visualizing the trajectories, and see how the error happens along the way.