

Indoor Environment Mapping Tutorials

Using RTAB-Map for mapping with Kinect

Required ROS Packages

- For interfacing Kinect with ROS
 1. libfreenect - sudo apt-get install libfreenect-dev
 2. freenect_launch - sudo apt-get install ros-indigo-freenect-launch
- For RTAB-Map with ROS
 1. rtabmap_ros - sudo apt-get install ros-indigo-rtabmap-ros

RTAB-Map

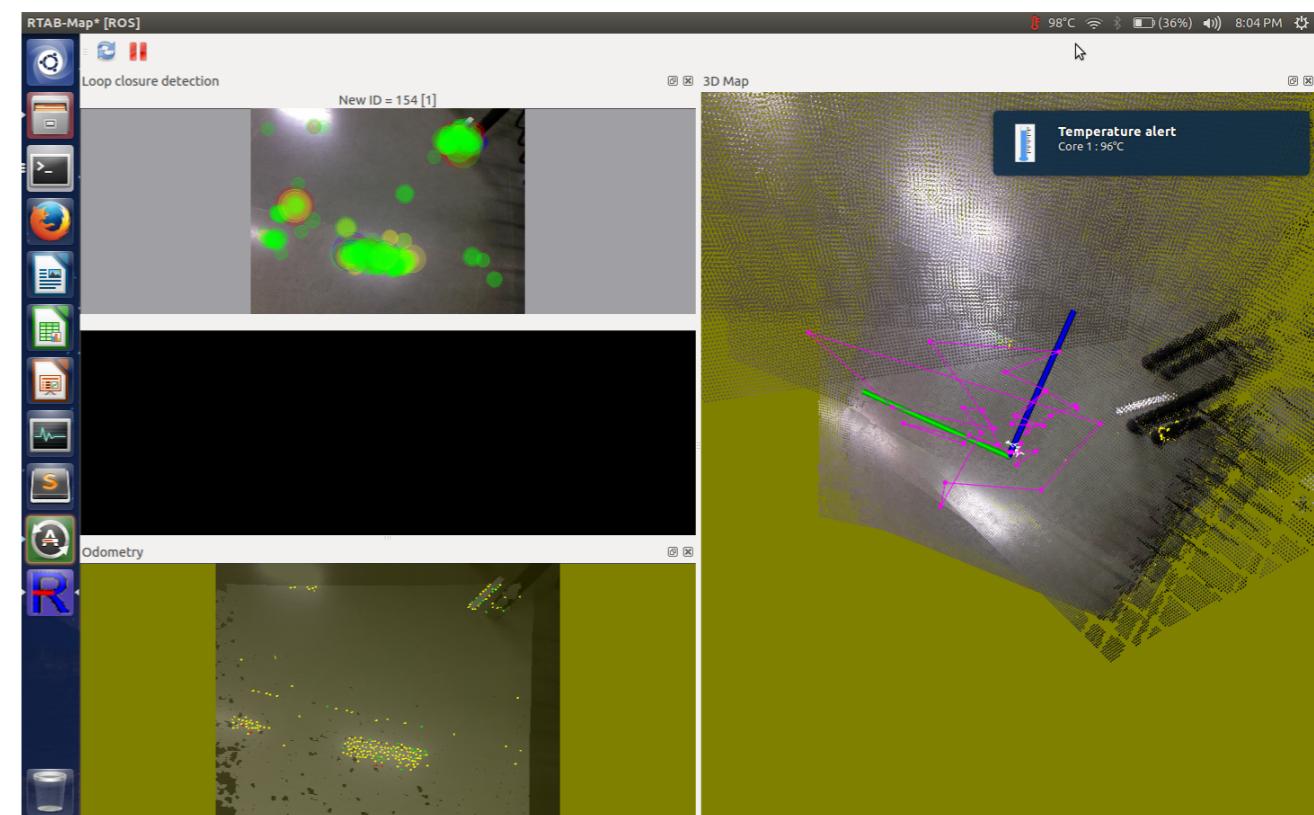
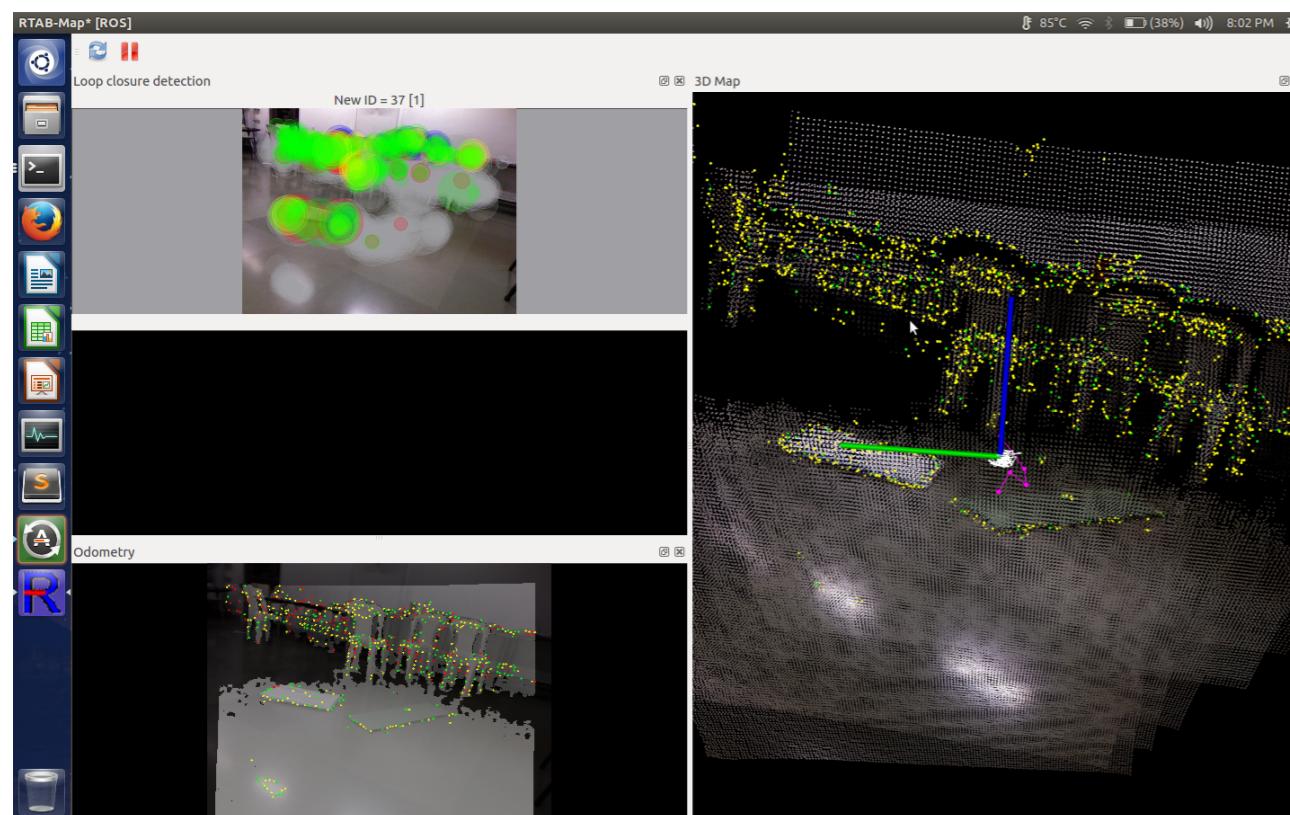
- Simultaneous Localisation And Mapping (SLAM) is the computational problem of constructing or updating a map of an unknown environment while simultaneously keeping track of an agent's location within it
- RTAB-Map (Real-Time Appearance-Based Mapping) is a RGB-D Graph-Based SLAM approach based on an incremental appearance-based loop closure detector
- RTAB-Map can be used alone with a hand-held Kinect or stereo camera for 6DoF RGB-D mapping

Procedure

- Connect Kinect camera to PC/Laptop
- Run “`roslaunch freenect_launch freenect.launch depth_registration:=true`”. This will start the connection between the Kinect camera and ROS. The point cloud, depth image and RGB image of the Kinect camera will be available as ROS topics
 1. Point cloud - `/camera/depth_registered/points`
 2. Depth image - `/camera/depth_registered/image_raw`
 3. Color image - `/camera/rgb/image_rect_color`

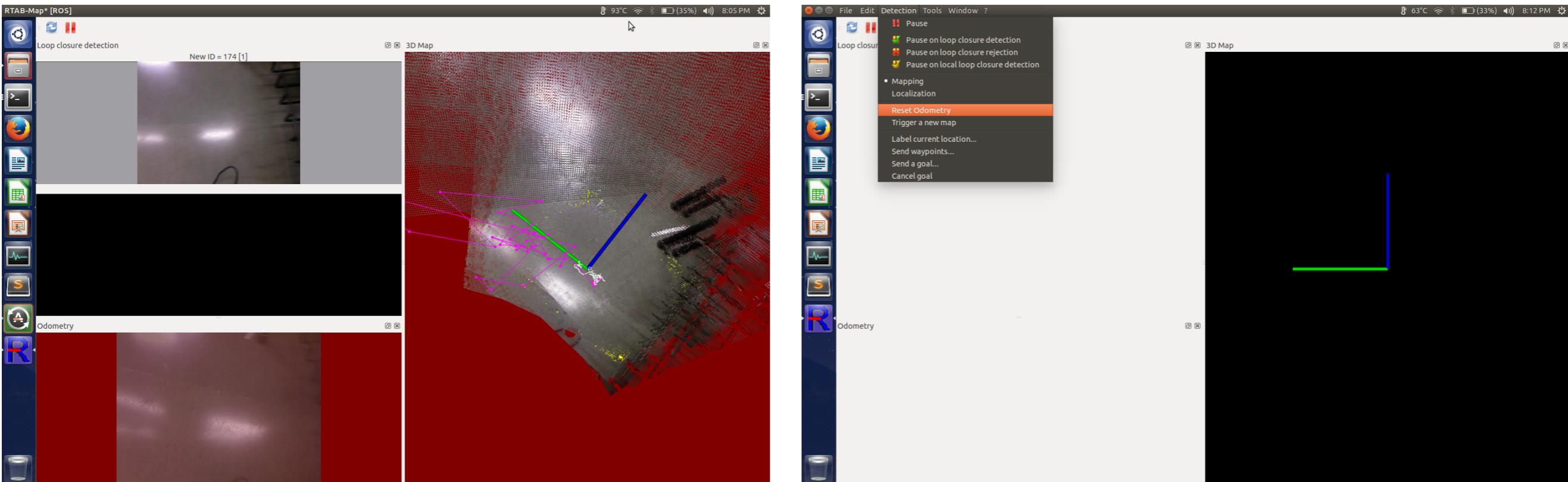
Procedure

- Run “roslaunch rtabmap_ros rgbd_mapping.launch”. This will start RTAB-Map.
- Move the Kinect camera slowly to map. The 3D map window changes colour based on how fast the camera is being moved:
 1. Black - The camera is being moved sufficiently slow
 2. Yellow - Warning. The camera is being moved fast. RTAB-Map might lose track of the camera’s location



Procedure

3. Red - RTAB-Map has lost track of the camera's location. To start the mapping process again point the camera to a previously mapped location and click on the 'Reset Odometry' option in the Detection menu.



4. Video link - <https://youtu.be/eghTYsVoqck>

References

- <http://introlab.github.io/rtabmap/>
- https://en.wikipedia.org/wiki/Simultaneous_localization_and_mapping

THANK YOU!