ROBOTICS PROJECT – PART 1

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Presented by

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Jampy Florian
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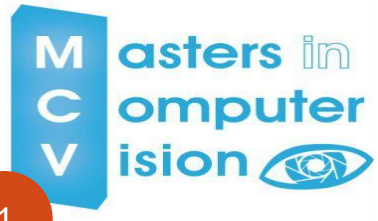
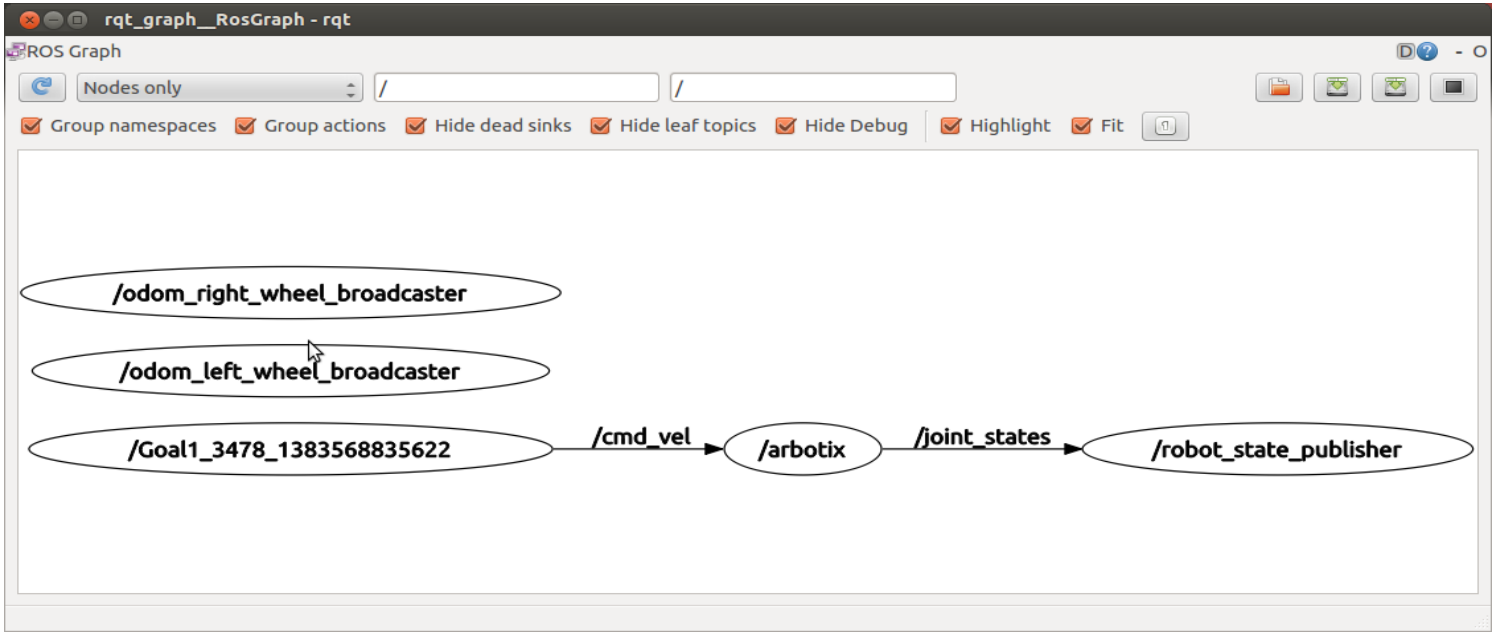


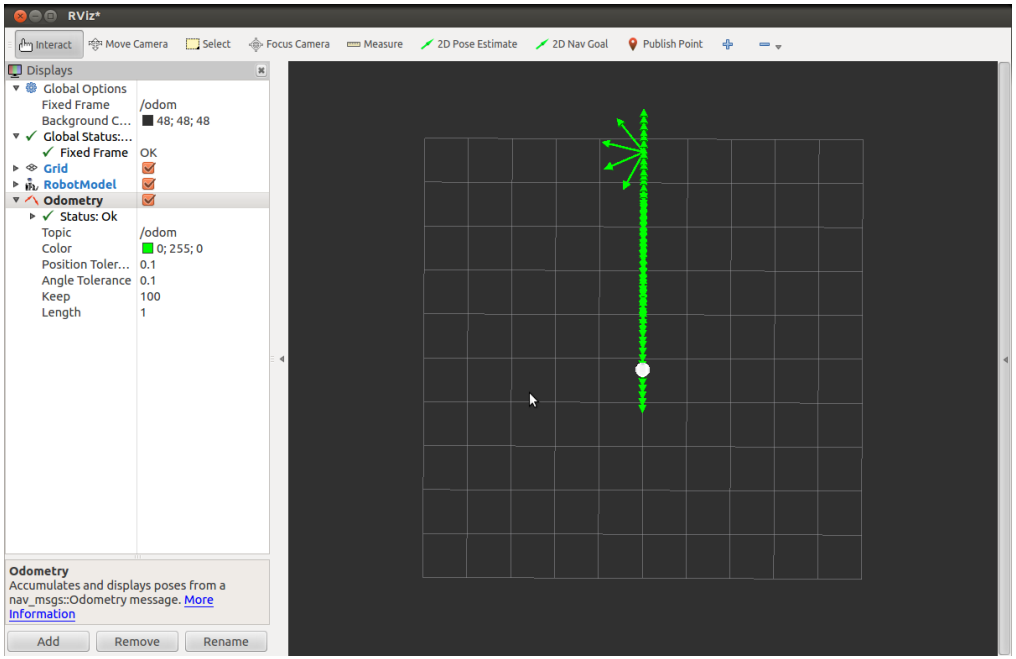
TASK 1 – Motion Planning (start to target)

- Code developed using simple for loop taking linear and angular velocities with low level programming.
- rqt_graph

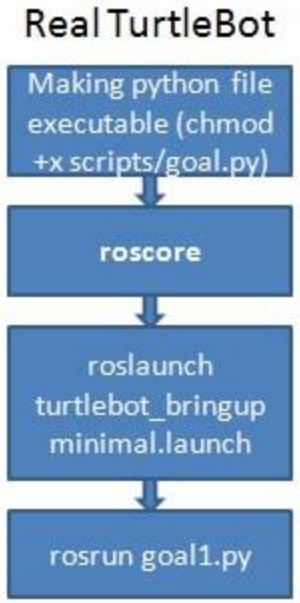


TASK 1 – MOTION PLANNING

- rviz (simulator) results

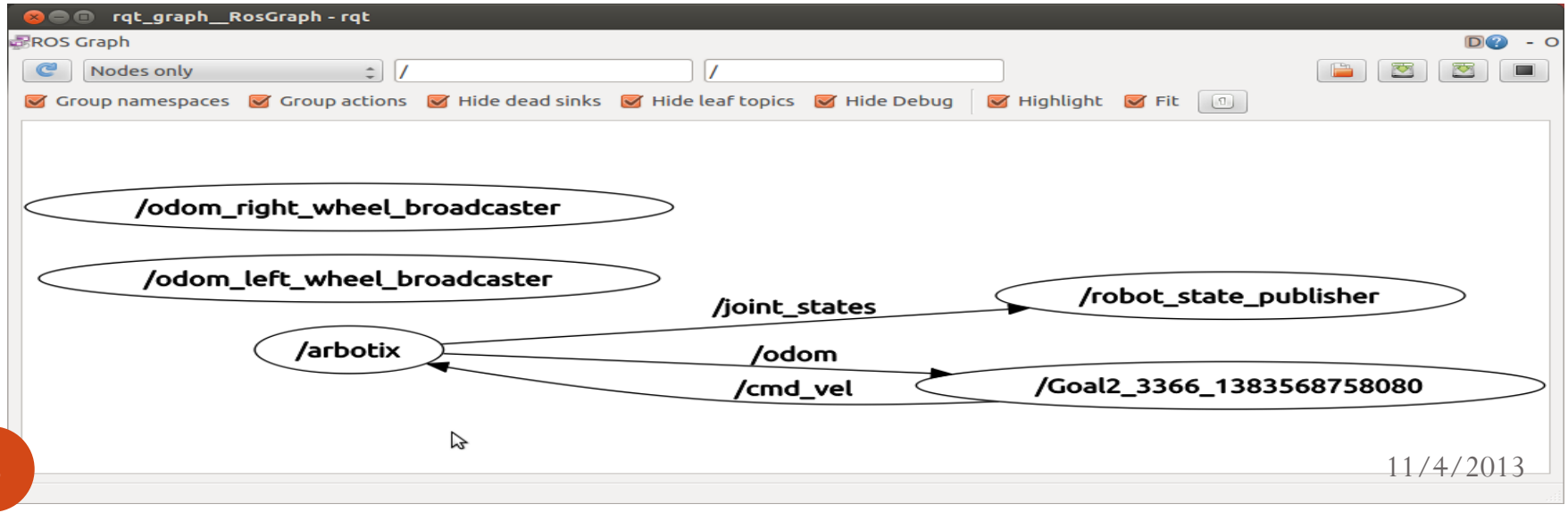


- Demonstration



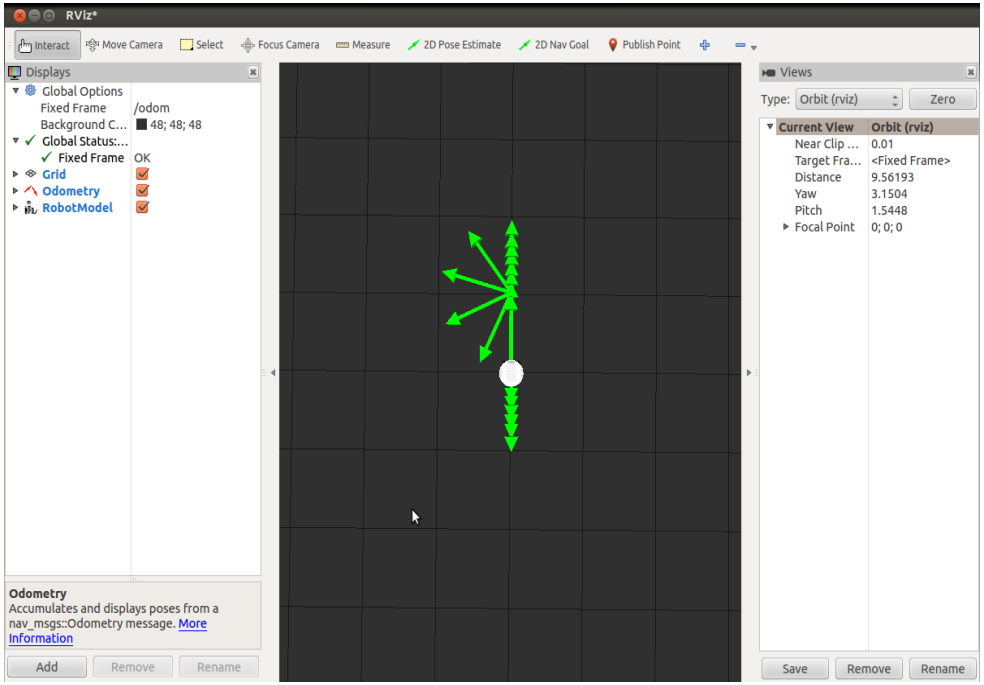
TASK 2 – MOTION PLANNING (Start – Target – Start)

- Code developed using Twist and odometry messages which doesn't provide satisfactory results so we take gyroscope information into consideration to get angle.
- rqt_graph



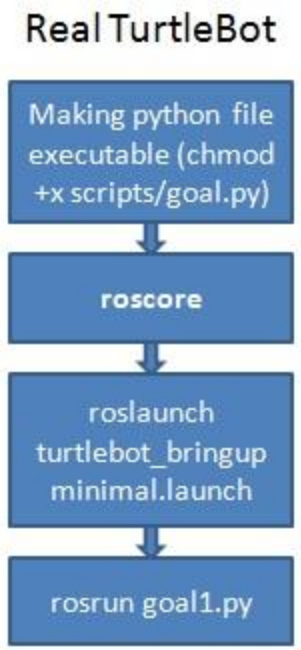
TASK 2 – MOTION PLANNING (Start – Target – Start)

- rviz results



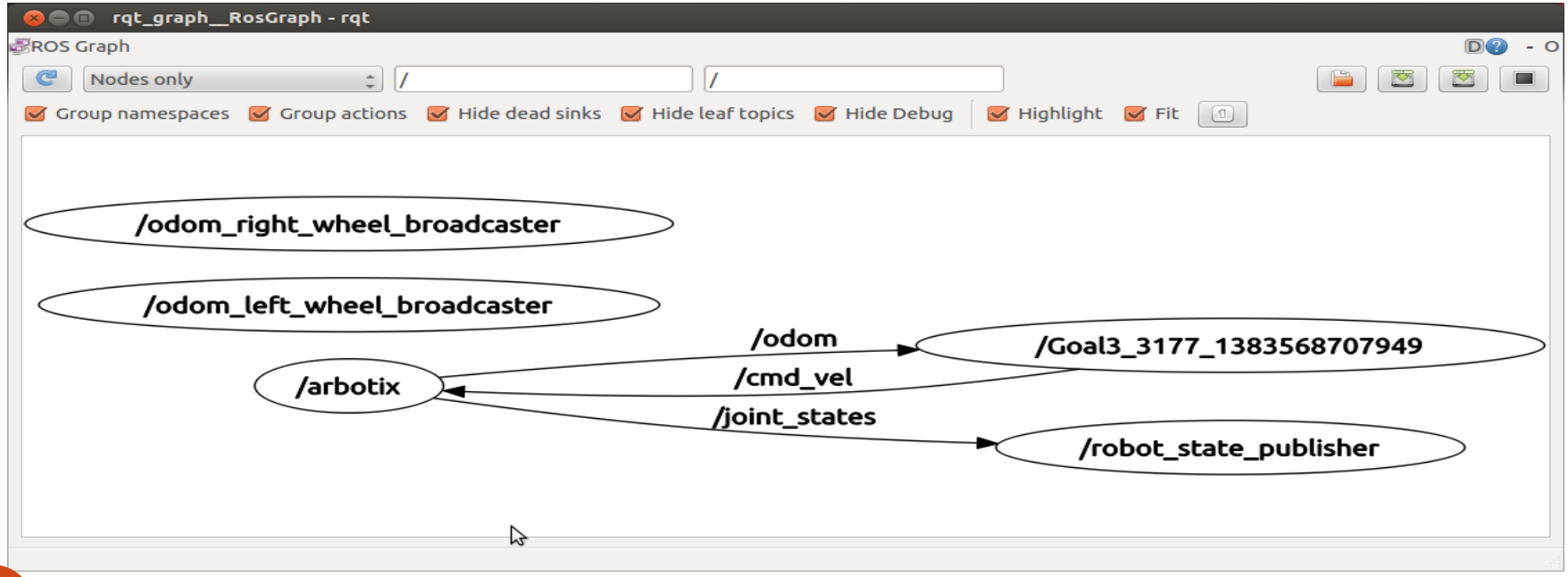
- Demonstration
  - In real time environment we get good result

Using gyro information.



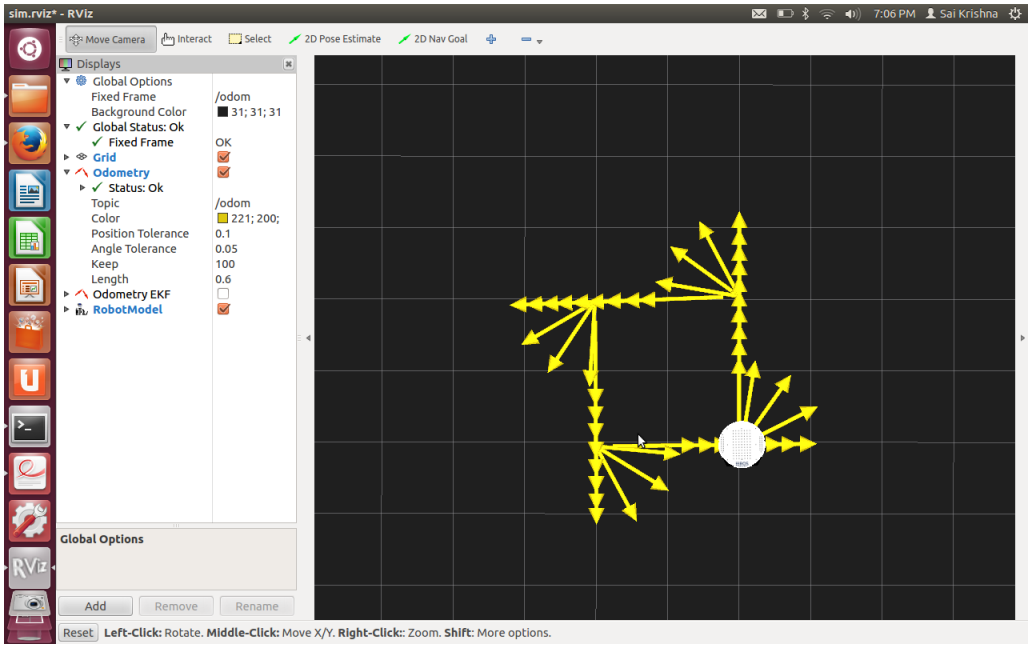
TASK 3 – NAVIGATION A SQUARE WITH TWIST/ODOMETRY

- We take gyroscope reading which gives good results when compared to odometry messages.
- rqt_graph

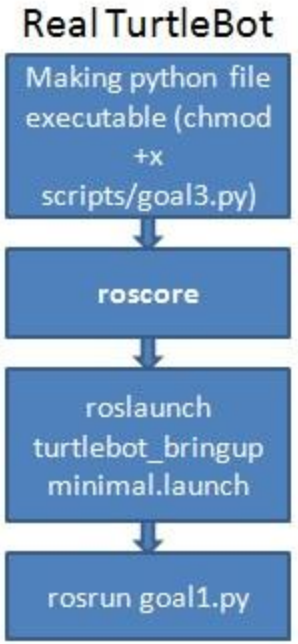


TASK 3 – NAVIGATION A SQUARE WITH TWIST/ODOMETRY

- rviz results



- Demonstration
  - Taking Gyro into consideration we get good result In both simulator and real time environment.

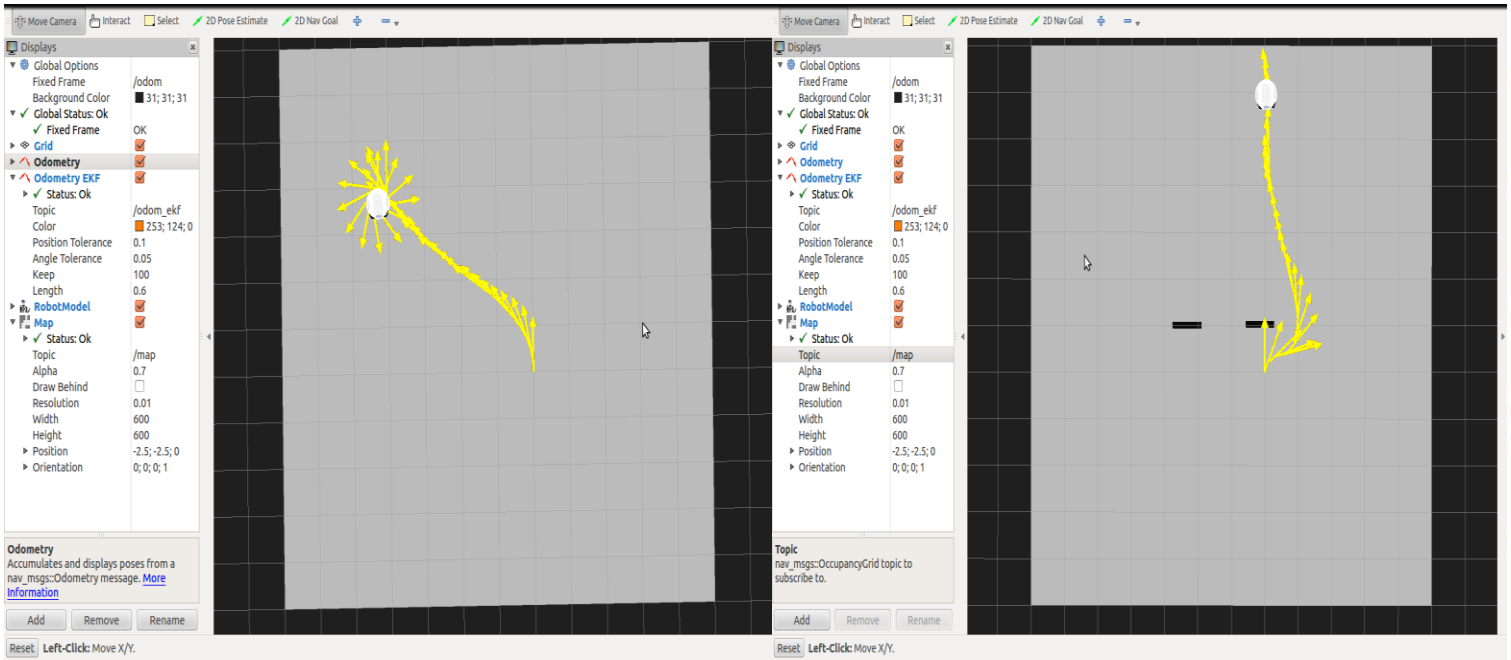


TASK 4 – NAVIGATION WITH PATH PLANNING

- Used different packages for path planning. Start pose and Goal pose should be same.
- Using Move_base (Global & Local Planner), AMCL (Adaptive Monto Carlo Localization) and EKF (Extended Kalman Filter).
- For AMCL we need laser information and map of the environment.

TASK 4 – NAVIGATION WITH PATH PLANNING

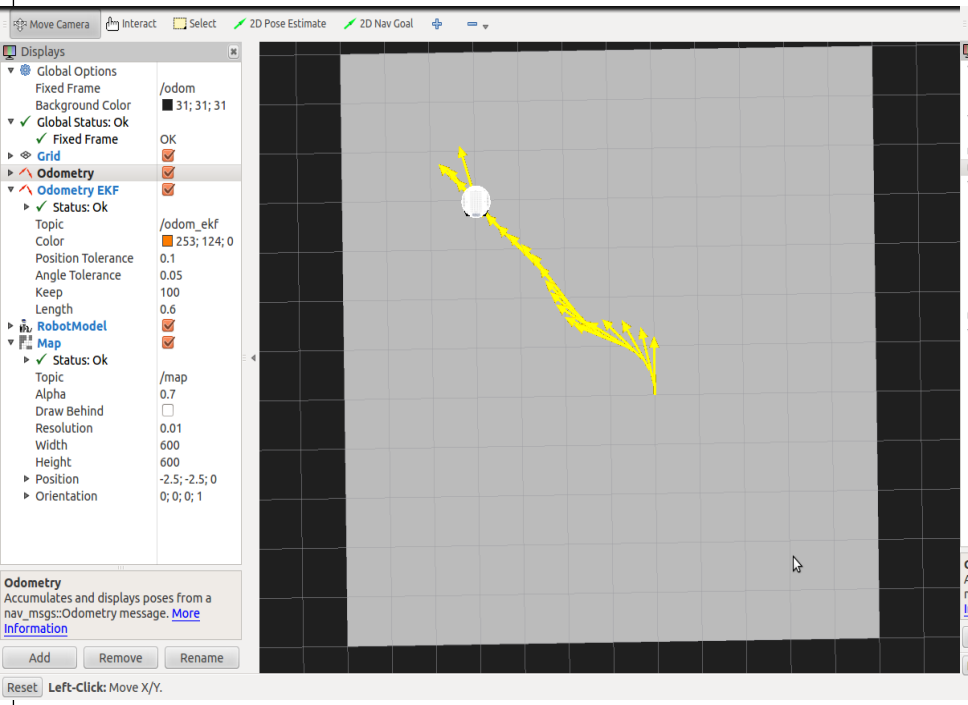
- rviz results using Move_Base Path Planning

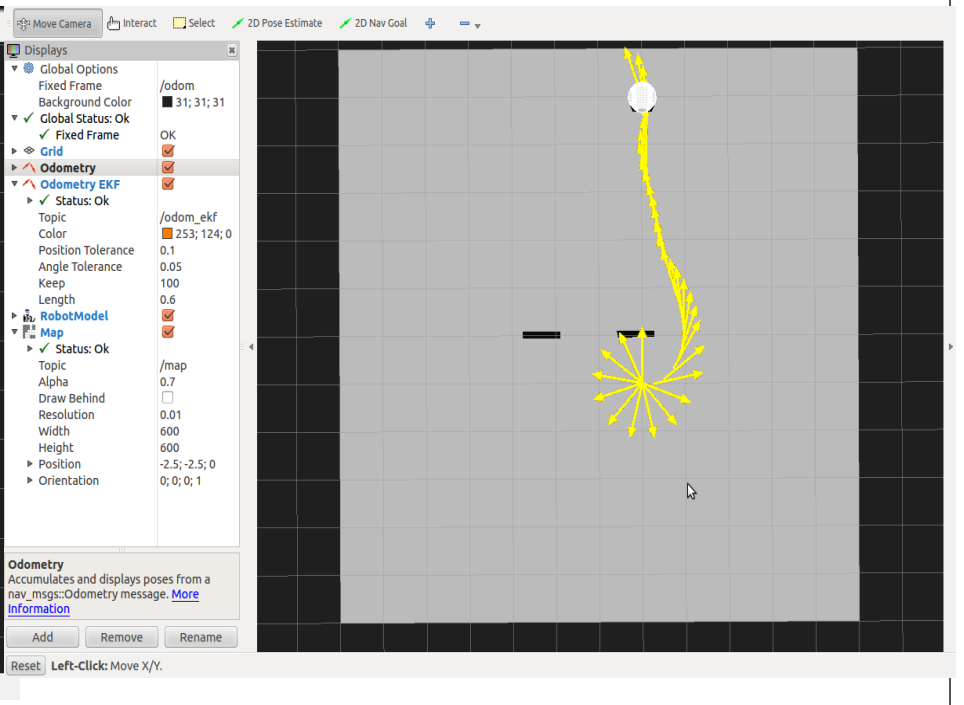


- Demonstration

TASK 4 – NAVIGATION WITH PATH PLANNING

- rviz results using AMCL Path Planning

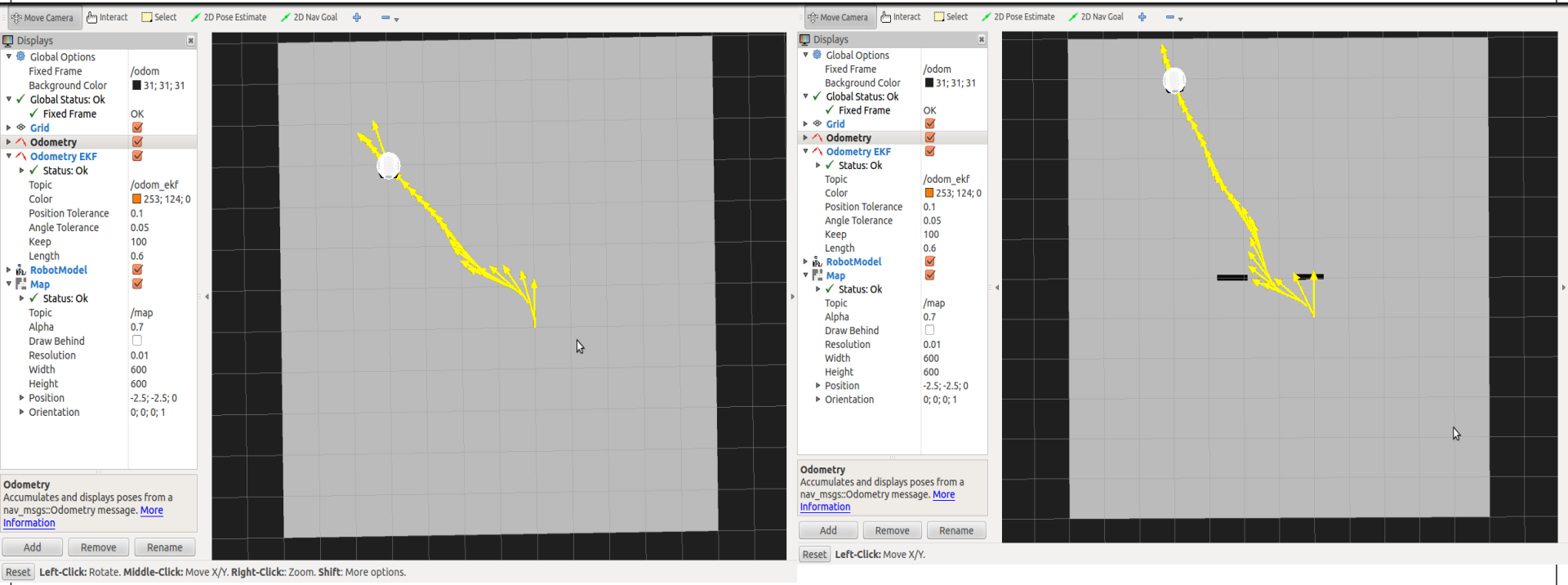




- Demonstration

TASK 4 – NAVIGATION WITH PATH PLANNING

- rviz results using EKF Path Planning



- Demonstration

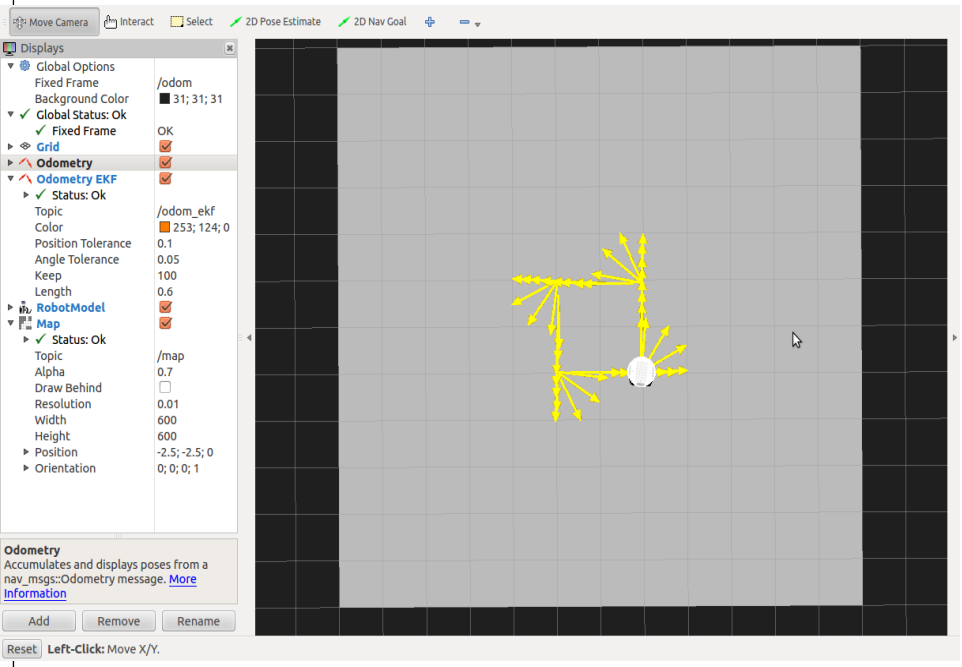
TASK 5 – NAVIGATION SQUARE WITH PATH PLANNING

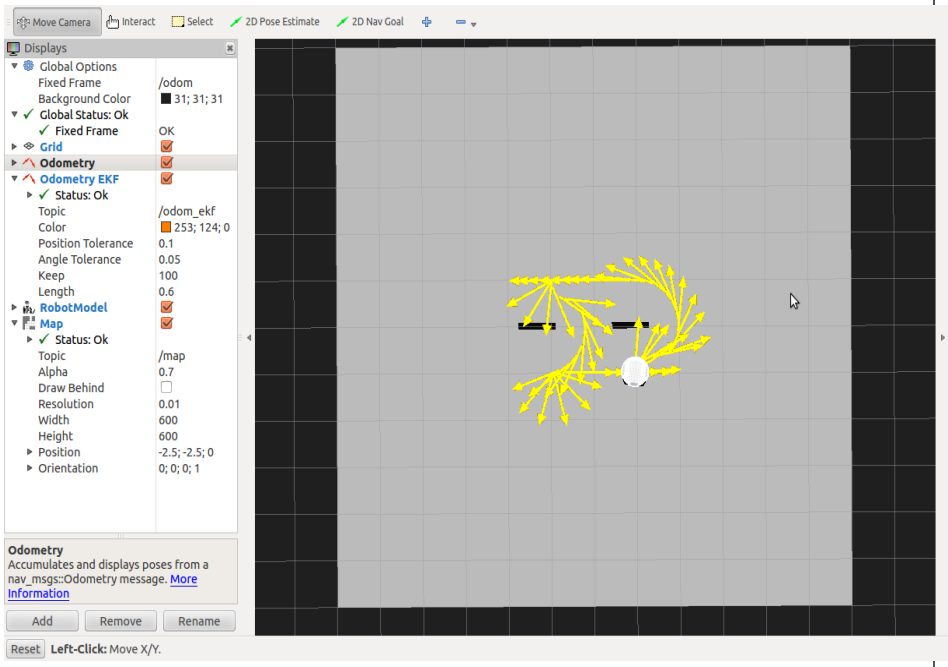
- In order to get the optimal path we implemented move_base which includes both global and local map.

- We get good result in simulator and real time environment.

TASK 5 – NAVIGATION SQUARE WITH PATH PLANNING

- Rviz results using Move_Base Path Planning





- Demonstration


THANK
YOU !