

In this task , '*ekf-ROS*' package is applied to the turtlebot . The '*ekf-ROS*' package will compare data generated from the robot's onboard sensors and apply sensor fusion to estimate the robot's pose as it moves around.

There are five different ROS packages invoked in this task, each with a different purpose listed below:

1. '***turtlebot gazebo package***' which launches a mobile robot inside a gazebo environment
2. '***robot\_pose\_ekf package***' estimates the position and orientation of the robot,
3. '***odom\_to\_trajectory***' package opens the odometry values generated over time into a trajectory path,
4. '***turtlebot\_teleop package***' which will let you drive the robot using keyboard commands.
5. Finally, the RViz package which will let you visualize the estimated position and orientation of the robot.

In general fusion of at least two onboard sensors is required. Extended Kalman filter will take all the noisy measurements, compare them, filter the noise, remove the uncertainties, and provide a good estimate of the robot's pose.

Note on EKF Package:- Some of the topics were renamed in the launch file to bring up the consistency. In the present launch file , the keyword '*remap*' is utilised to rename the IMU topic of ekf node to match with the turtlebot one.

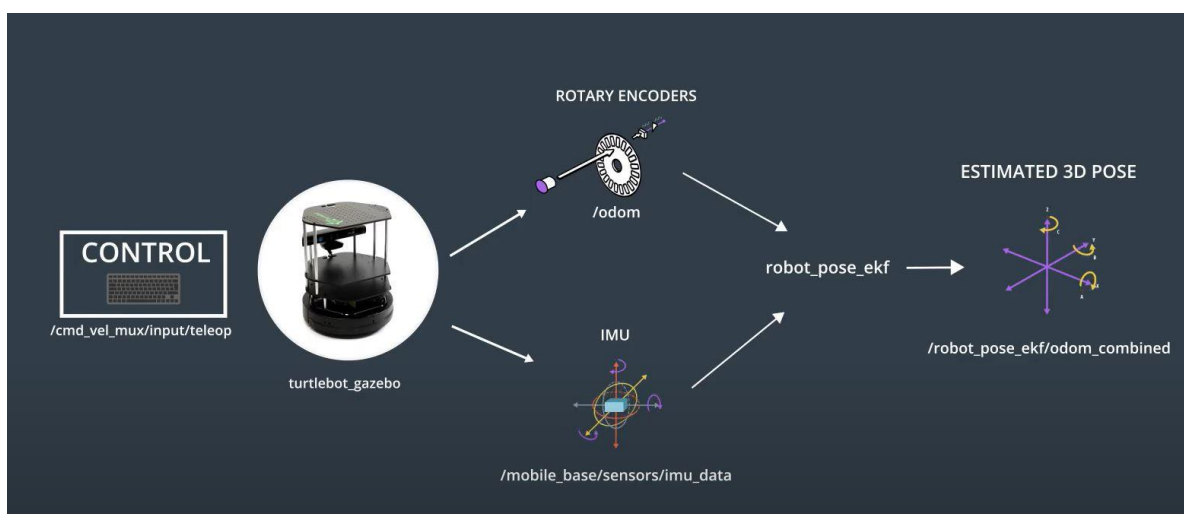


Fig. shows the final tree of turtlebot with ekf