Reflection: ROS2 Topics & Teleoperation with TurtleBot3

In this task, I got to explore how TurtleBot3 navigates using ROS2 topics and TF data. The key topics /cmd_vel, /odom, /scan, and TF all work together to make the robot move and understand its environment. The /cmd_vel topic sends velocity commands from the teleoperation node, telling the robot to move forward, backward, or turn. The base controller then drives the wheels according to these commands.

The /odom topic provides continuous feedback on the robot's position and orientation, which is critical for localisation. TF frames complement odometry, allowing RViz2 to display the robot correctly in the environment. The /scan topic delivers LIDAR data, giving the robot information about obstacles and surroundings. Together, they form a feedback loop: /cmd_vel moves the robot, /odom and TF update its position, and /scan monitors obstacles.

One thing I noticed - if /odom or TF are not recorded, the robot looks static in RViz2 even though /cmd_vel and /scan are there. This highlights the importance of recording all relevant topics for accurate visualization. Recording and replaying with ros2 bag helped me see how ROS2 nodes, topics, and messages interact in real time. Overall, this task gave me good understanding of mobile robot navigation and the practical use of ROS2 visualization tools.