



Problem Statement (Electronics / Software Track)

Task

Develop a differential-drive robot that can be controlled through ROS using the `teleop_keyboard` package.

Follow the tutorial series provided below:

Tutorial Link:

<https://www.youtube.com/watch?v=4JVdT523gfw&list=PL1YH3iMfizDLgcrTL1rj4NxXYKnPLLkby&index=1>

Notes:

Videos 18, 29, and 32 may be skipped.

Video 22 mentions 3D printing; you may ignore this and build the chassis from any suitable material.

Instead of an onboard battery, you may use a wired off-board power supply during development and testing.

All components may be:

Commercial off-the-shelf, or

Custom-fabricated, with fabrication method and justification clearly stated.

Note: The components shown in the tutorial are only for reference. Participants may use the same parts or select any alternatives of their choice.

Specifications

Must use two motors in a differential-drive configuration.

Robot must be controllable through ROS using the `teleop_keyboard` package.

Deliverables

1. Video Demonstration

Show the physical robot from all major angles.

Demonstrate movement using the ROS teleop keyboard.

Explain every component used:

Why it was selected

What role it plays

Any fabrication work done

2. Bill of Materials (BOM)

Provide a complete component list.

Include product links or fabrication details.

3. Extra marks will be awarded for any unique feature or standout capability added to the robot.