READ ME

This package aims to facilitate the nodes execution and launches every necessary node to make the control possible, thus, it does not have nodes, only launch files.

- **simulation.launch :** launches the gazebo environment, model, both findlines nodes, and control node.

- **system.launch :** launches only both findlines nodes, and control node.

To run the robot simulation, you can:

roslaunch engrais simulation.launch

Launching gazebo simulation, both findlines nodes, and control node with default parameters. If one wants to change the arguments, it can be done by changing the launch file, or in the command line as following:

roslaunch <pkg> <file> <paramName>:=“<value>”

Simulation and System Common Parameters:

- **front_findlines_node_name :** front findline node name
- **back_findlines_node_name :** back findline node name
- **central_node_name :** control node name

- **front_scan_topic :** front LIDAR topic name
- **front_lines_topic :** front findline topic name

- **back_scan_topic :** back LIDAR topic name
- **back_lines_topic :** back findline topic name

- **left_weel_topic :** left wheel topic name
- **right_weel_topic :** right wheel topic name

- **change_mode_topic :** topic to change from automatic to manual (“none” deactivates it)
- **emergency_topic :** topic to stop all nodes in case of emergency (“none” deactivates it)

- **selected_lines_topic_name :** name of topic to publish selected lines

- **rviz_frame :** main rviz frame
- **front_rviz_frame :** front LIDAR rviz frame (so it can be translated to main frame)
- **back_rviz_frame :** back LIDAR rviz frame (so it can be translated to main frame)

- **algorithm :** findlines algorithms
- **execution_time_file :** right wheel topic name

- **mode :** sets mode to automatic or manual as default
- **number_lines :** number of models contained in selected vector (must be pair)
- **turn_times :** number of times the robot has to turn

- **sleep_time_ms :** control period in ms (recommended 250ms)
- **max_velocity :** robot's max velocity
- **body_size :** robot's length

Simulation Parameters:

- **world :** gazebo's environment name (engrais, engrais2, engrais3 or engrais4)
- **position_file :** file name to save robot's trajectory ("none" deactivates this function)