S#1 :: Mobile Robots and Course How

Monday, 12 July 2021 10:00 AM

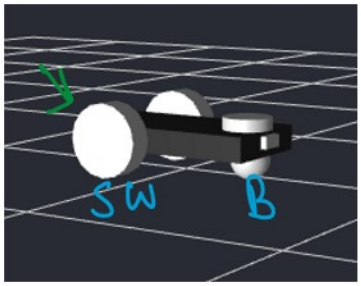
- Robots using ground for locomotion

- Legged
- Tracked

Wheel Types

http://www.roboticsplatform.com/knowledge/Classification_of_Robots/Types_of_robot_wheels.html

Previously in the Free Basic Ros2 Course :



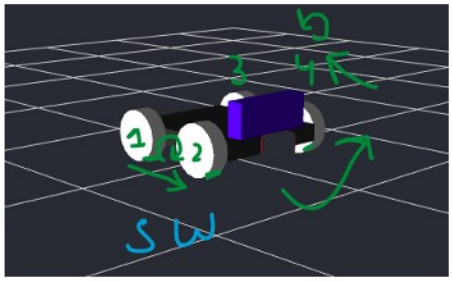
Dolly

Driving Mechanisms ?

← Differential

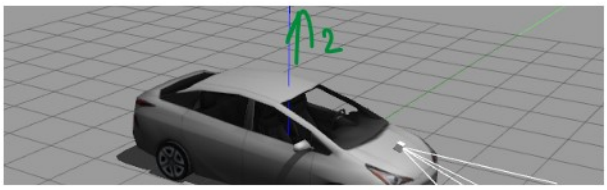
Skid steering →

The Mobile Robot we are going to be using is



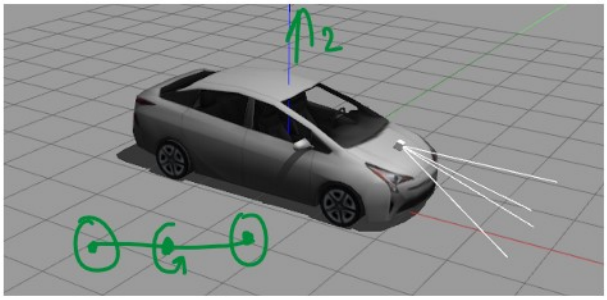
ROVER

The Next Robot or I should say a CAR we will be playing with ~~Prius Hybrid~~



Driving Mechanism ?

-Ackes Man drive.

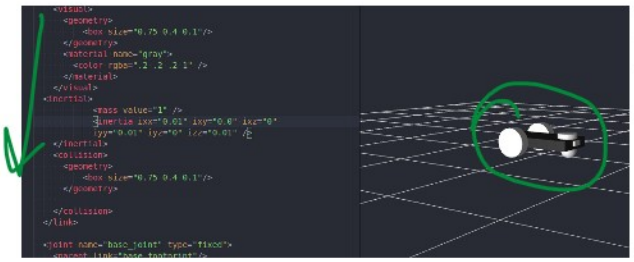


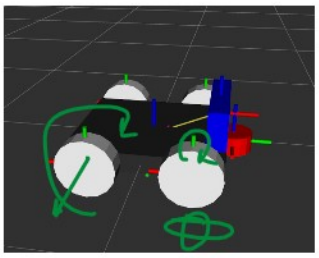
Driving Mechanism ?

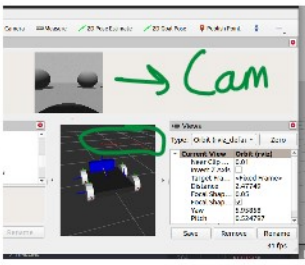
-Ackes Man drive.

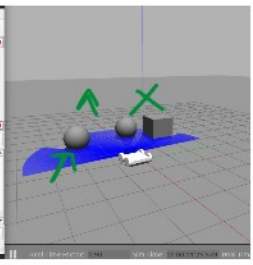
Robotics Project Workflow in ROS

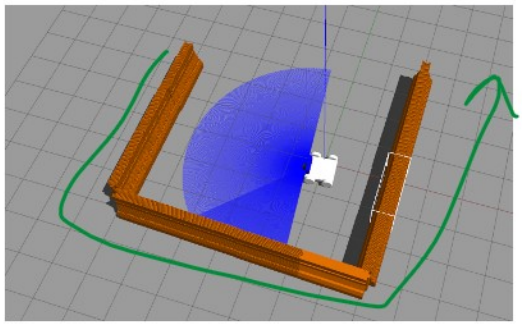
URDF → Joints axis test → Plugins addition → Simulation set → Writing Algorithms











Writing algorithms for
- Obstacle Avoiding
- Wall Follow Behavior

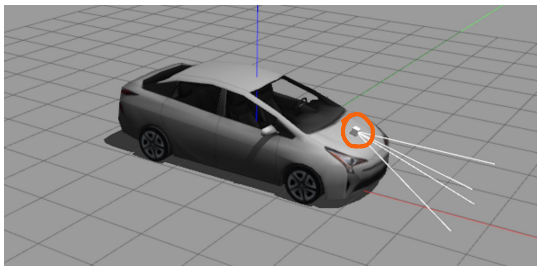
```python
import rclpy
from rclpy.node import Node
from sensor_msgs.msg import LaserScan
from geometry_msgs.msg import Twist

class ObstacleAvoidingBot(Node):
    def __init__(self):
        super().__init__('Go_to_position_node') ## name of the node
        # publisher
        self.publisher = self.create_publisher(Twist, '/cmd_vel', 40)
        #subscriber
        self.subscription=self.create_subscription(LaserScan,'/scan',self.get_scan_values,4
        #periodic publisher call
        timer_period = 0.2;self.timer = self.create_timer(timer_period, self.send_cmd_vel)
        ## Initializing Global values
        self.linear_vel = 0.22 ## given a value
        self.velocity=Twist()
        self.regions={'right':[],'mid':[],'left':[]}

    def get_scan_values(self,scan_data):
        ## We have 360 data points so we divide them in 3 regions
        ## we say if there is something in the region get the smallest value
        self.regions = {
        'right':   min(min(scan_data.ranges[0:120])  , 100),
        'mid':     min(min(scan_data.ranges[120:240]), 100),
```

OOP: Python

Bring in Pre-made gazebo models Prius Hybrid



Online available popular robot repositories explorations

Add camera sensor to it on the go
- Line Following Behavior