Ciberfísico de un Robot Manipulador Móvil Omnidireccional

Diseño Mecatrónico

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- **Ever Antonio Marrufo Manríquez 193534**
- **Alan Ruperto Ponce Morales 200942**
- **Josué Jiménez Ramírez 201133**
- **Manuel Piña Olivas 201060**

Diseño mecánico CAD

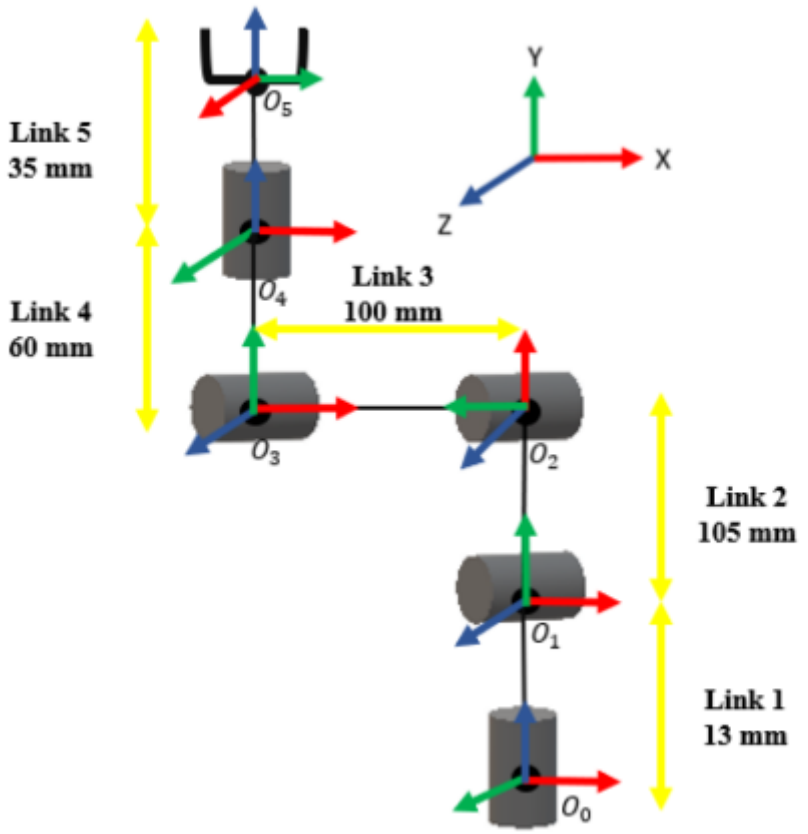
Raspberry Pi5

Arduino Mega Uno

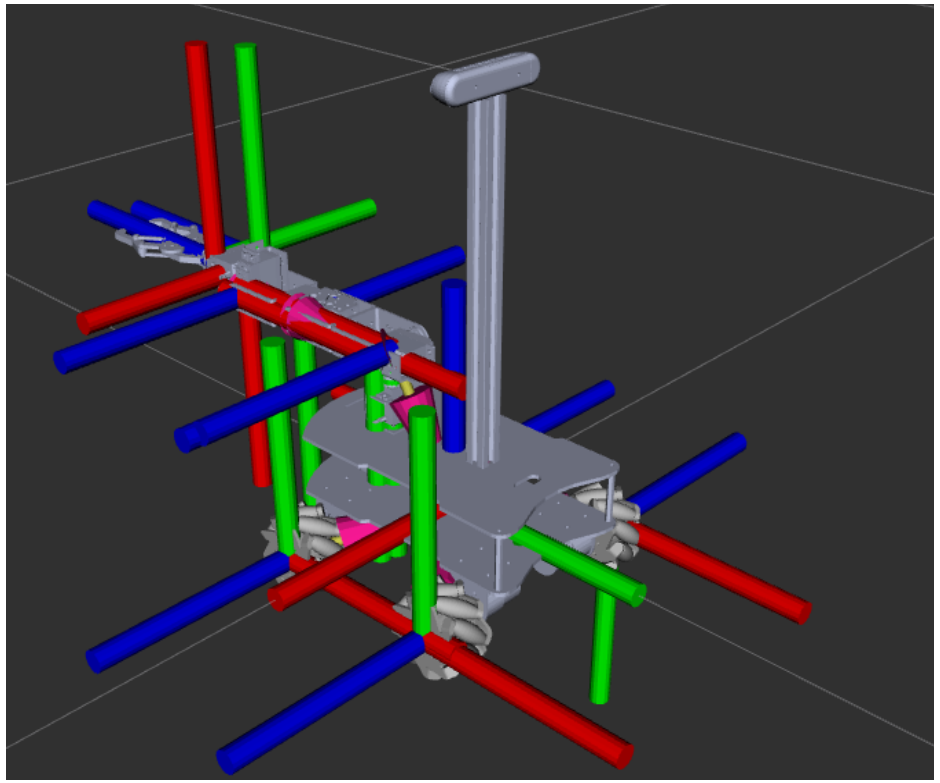
Baterías Recargables

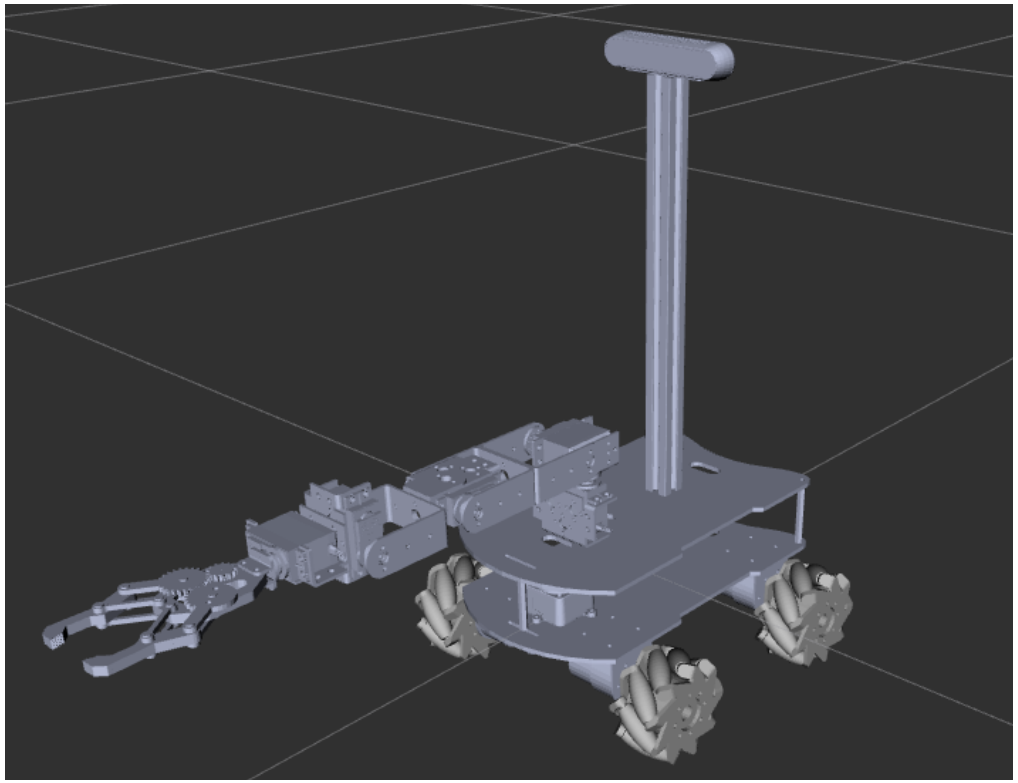
Diseño URDF

Marcos de referencia del manipulador.

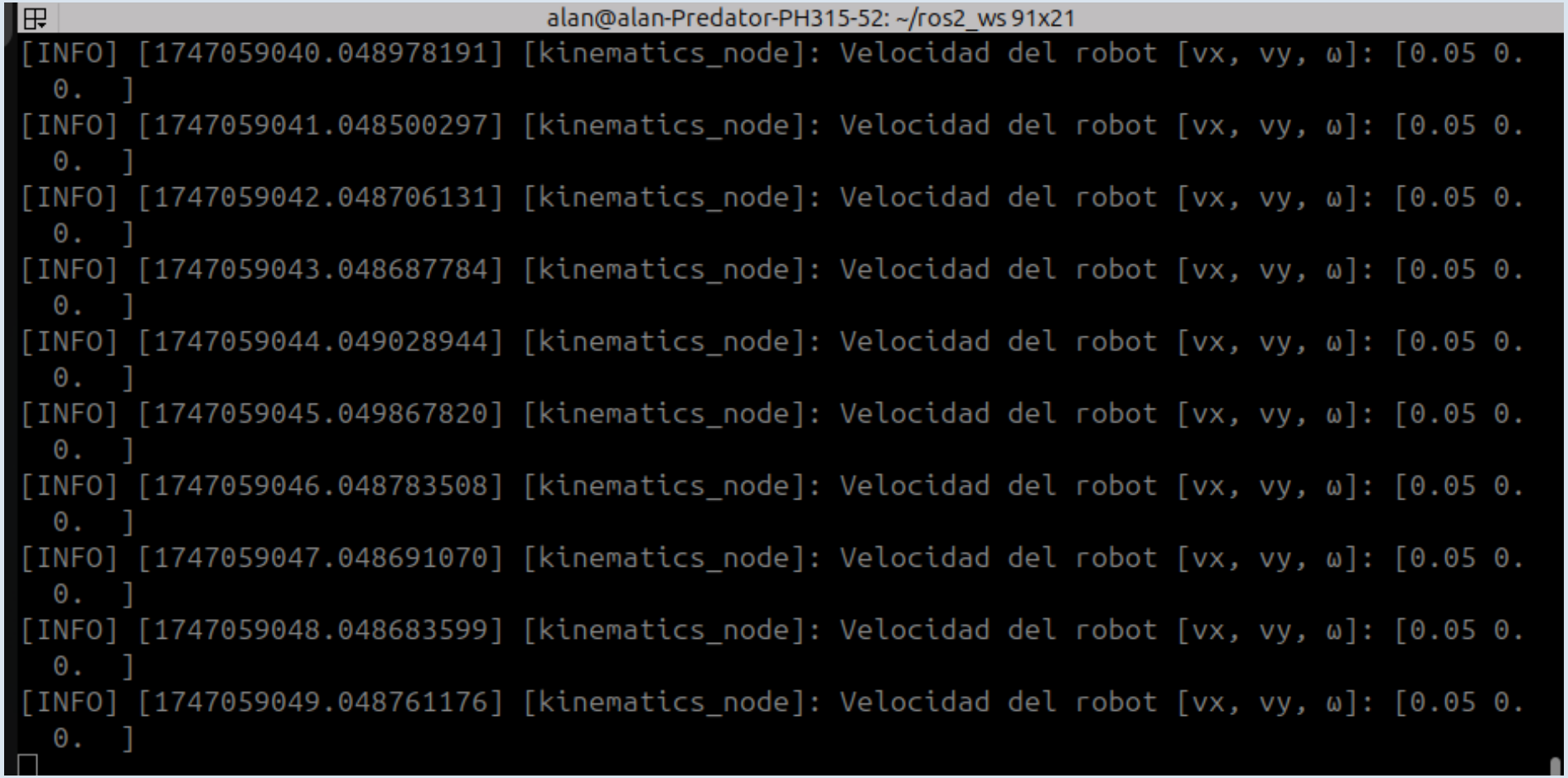


RVIZ

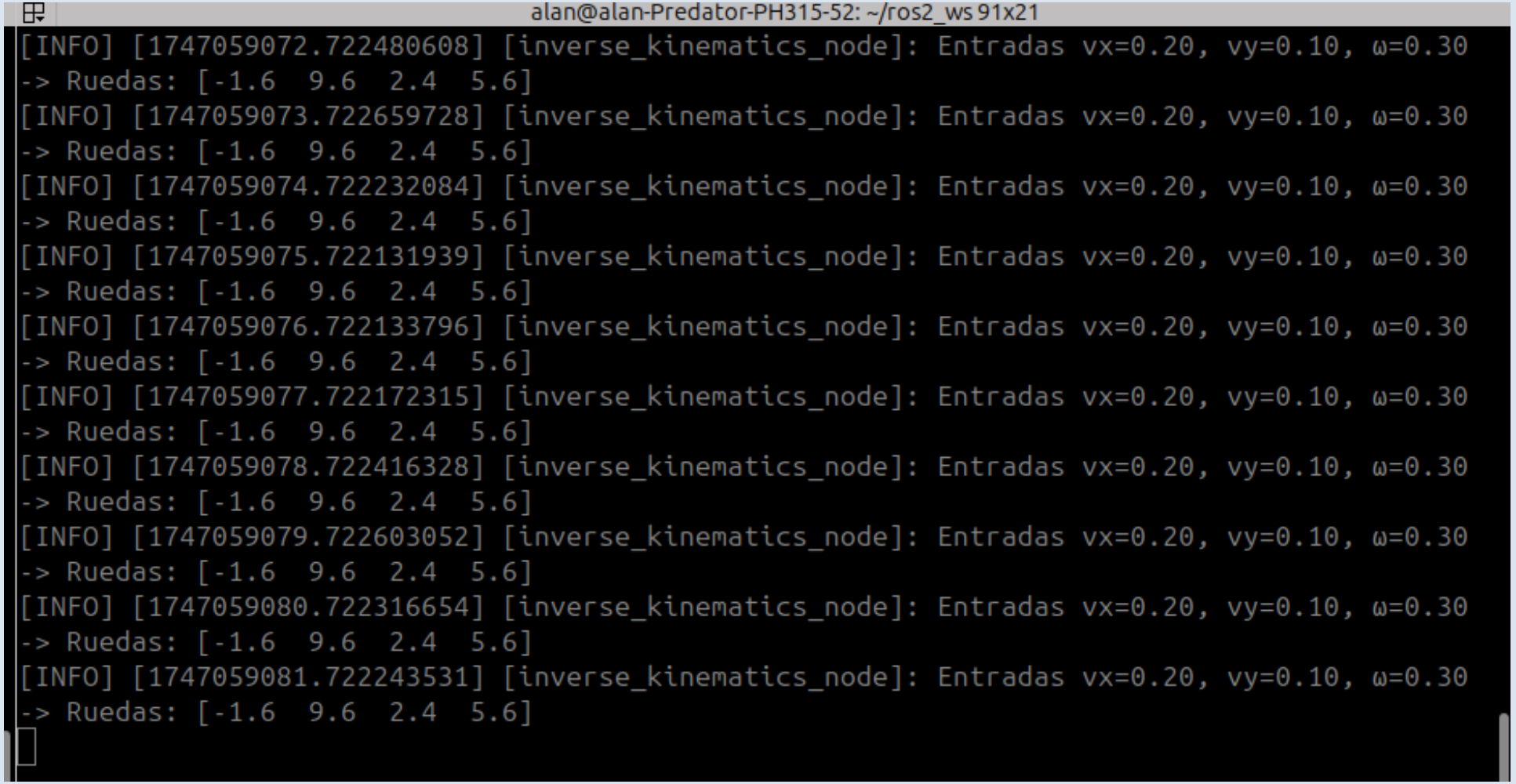




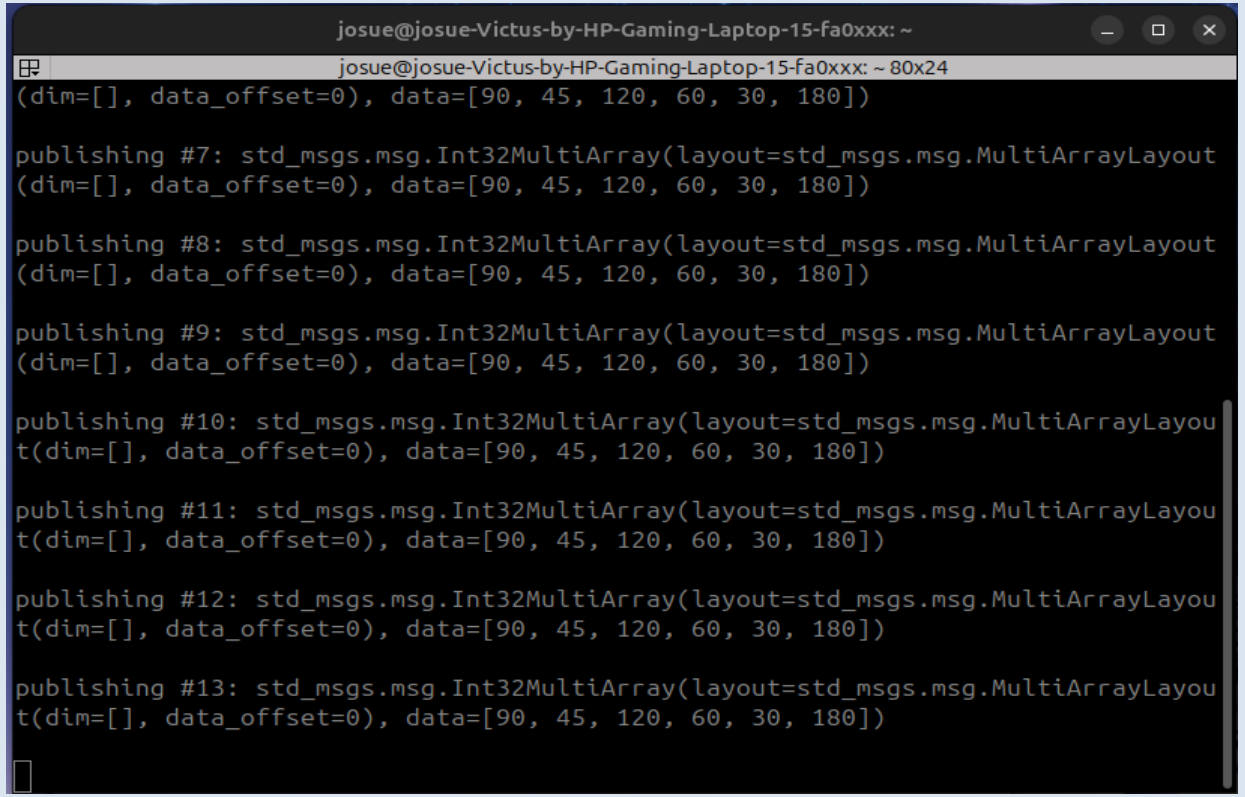
Cinemática directa de la parte omnidireccional

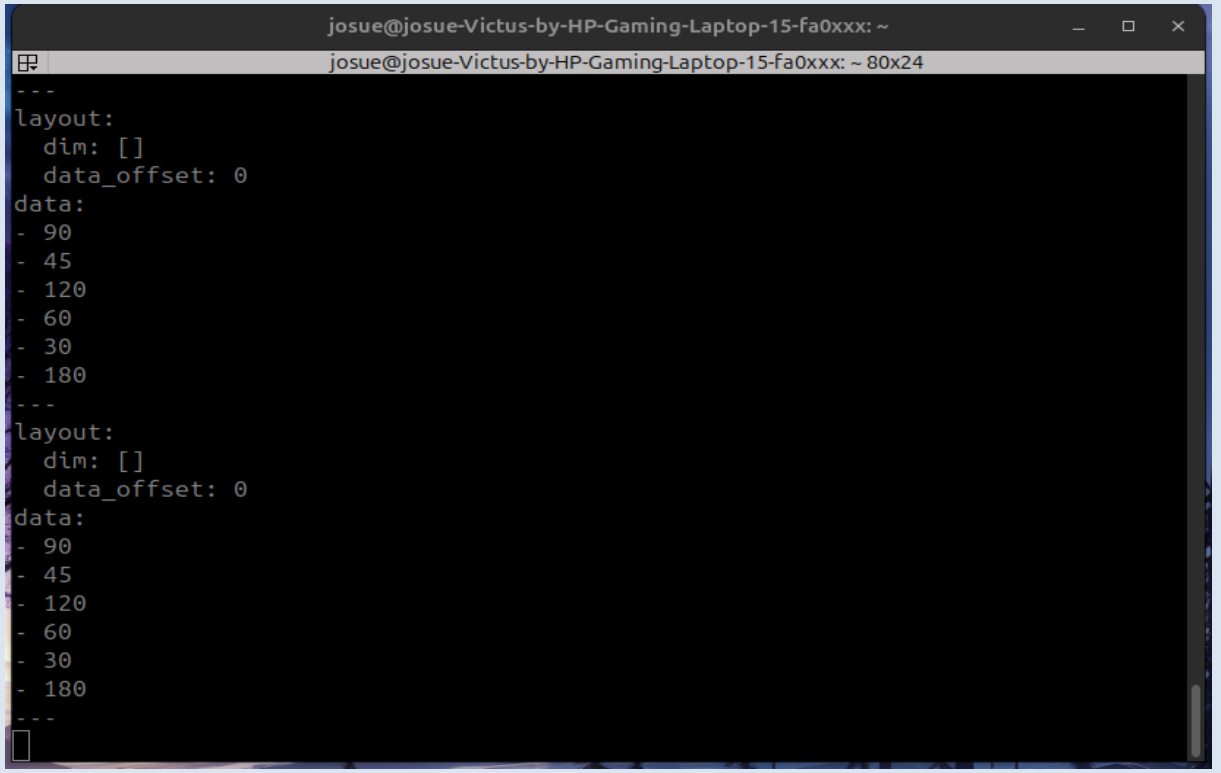


Cinemática inversa de la parte omnidireccional

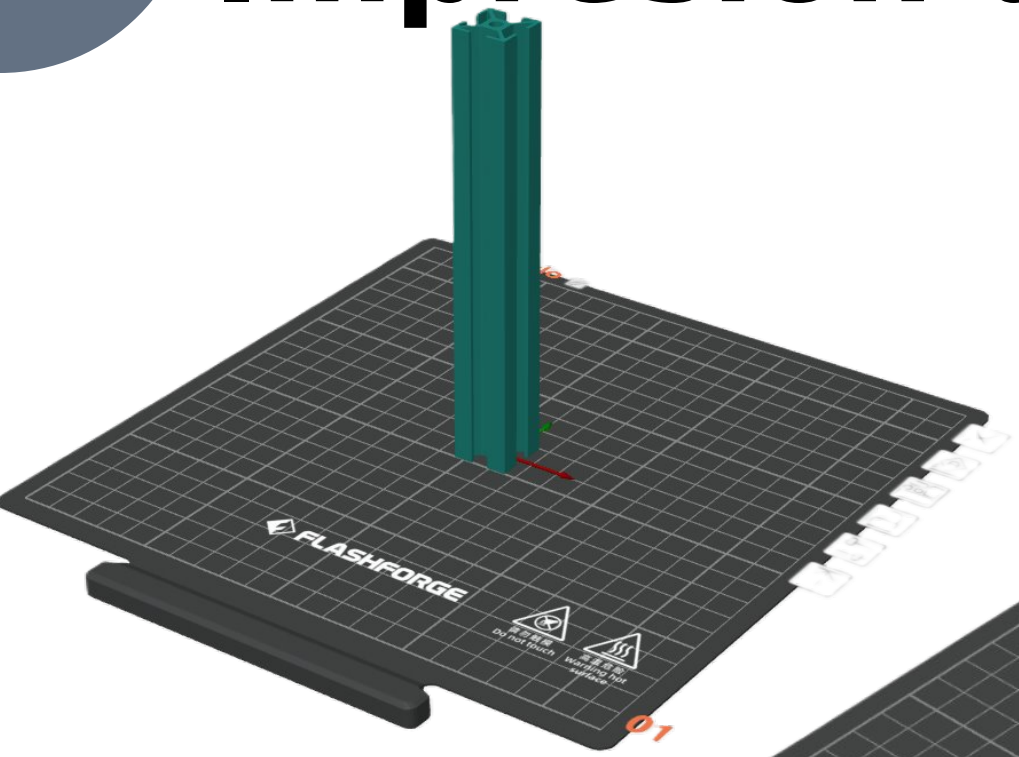


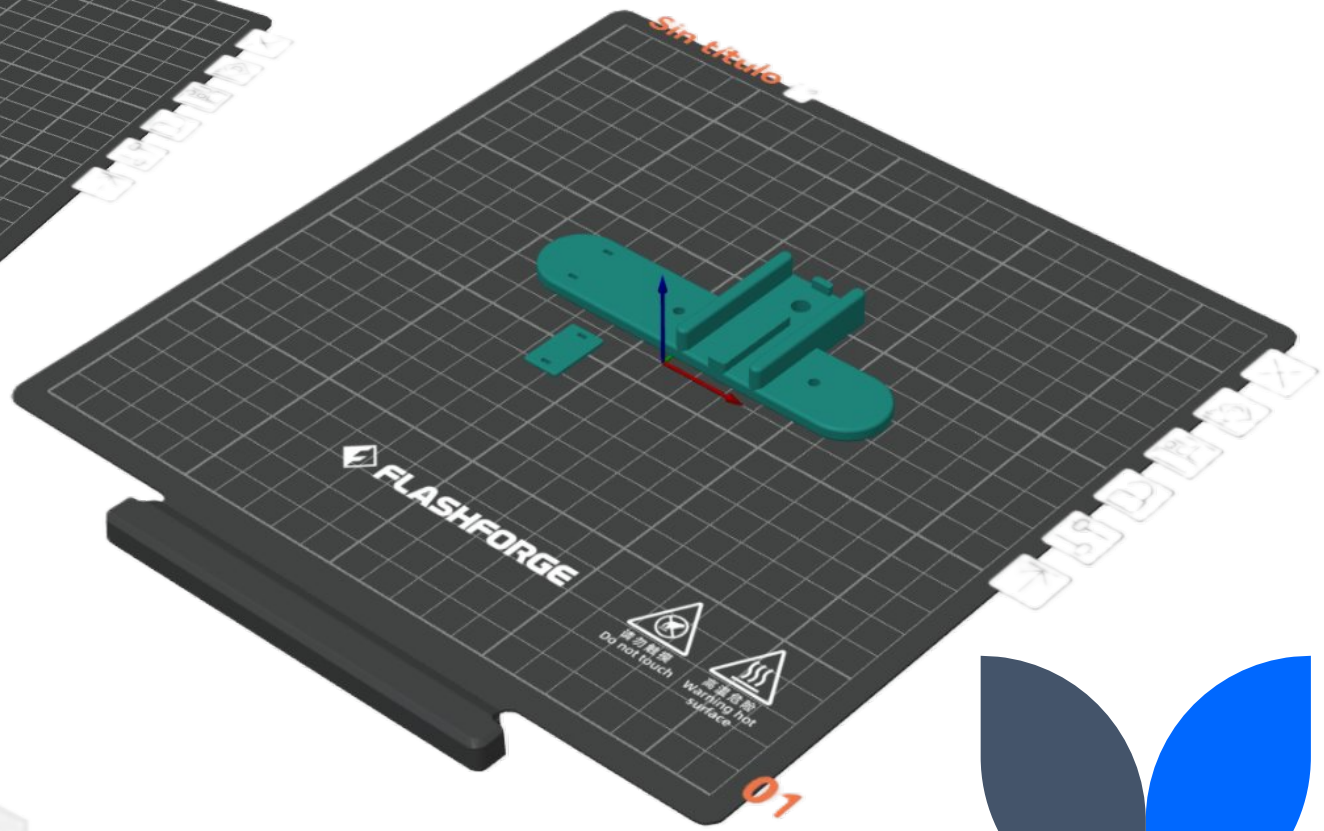
Sistema de Mapeo Basado en ROS 2 con Control de Servomotores y Subscripción de Datos

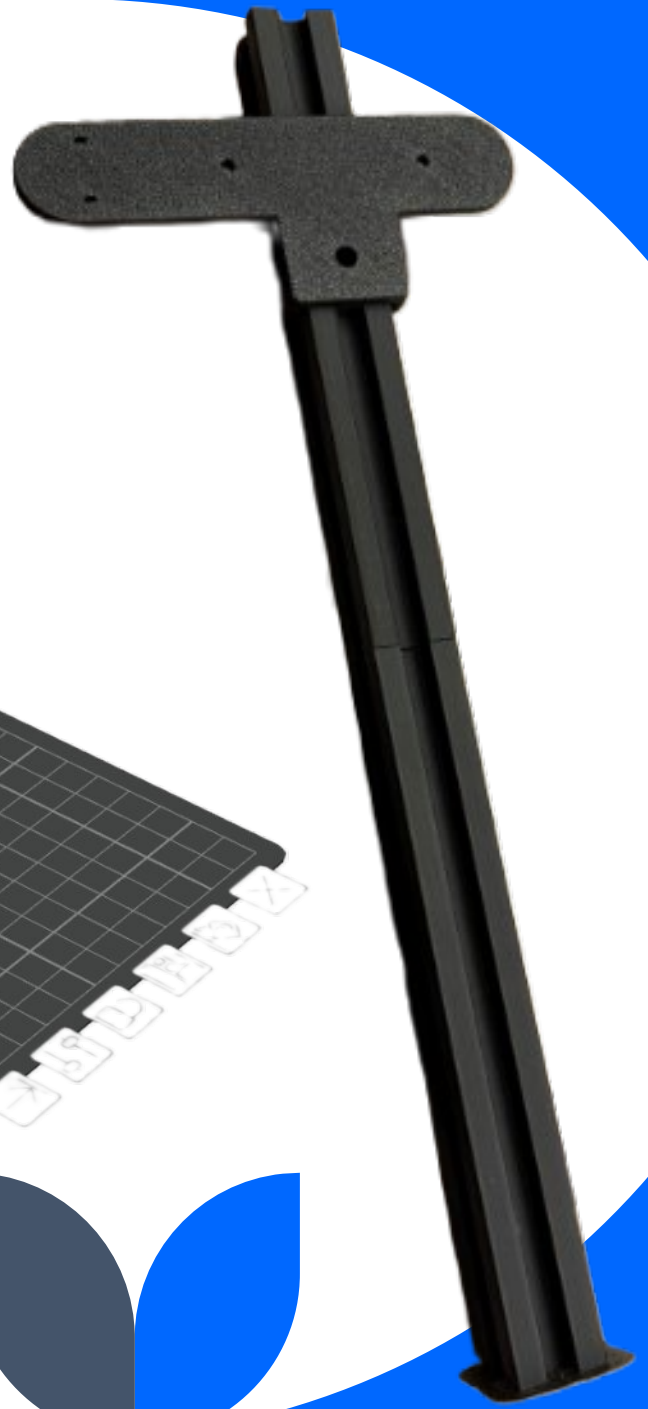




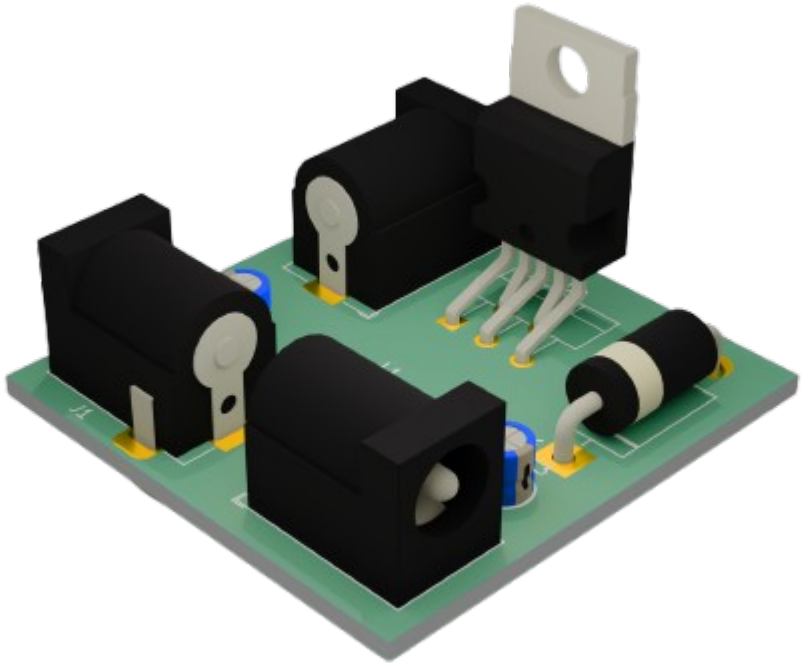
Impresión de piezas

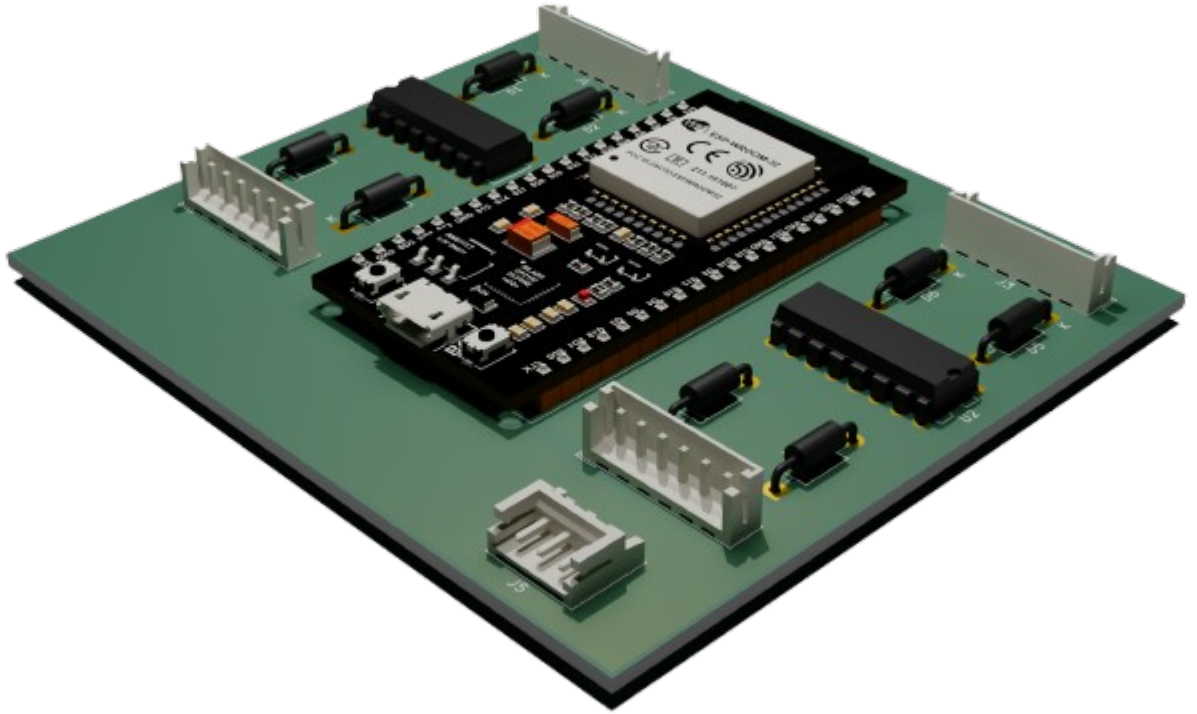






PCB'S

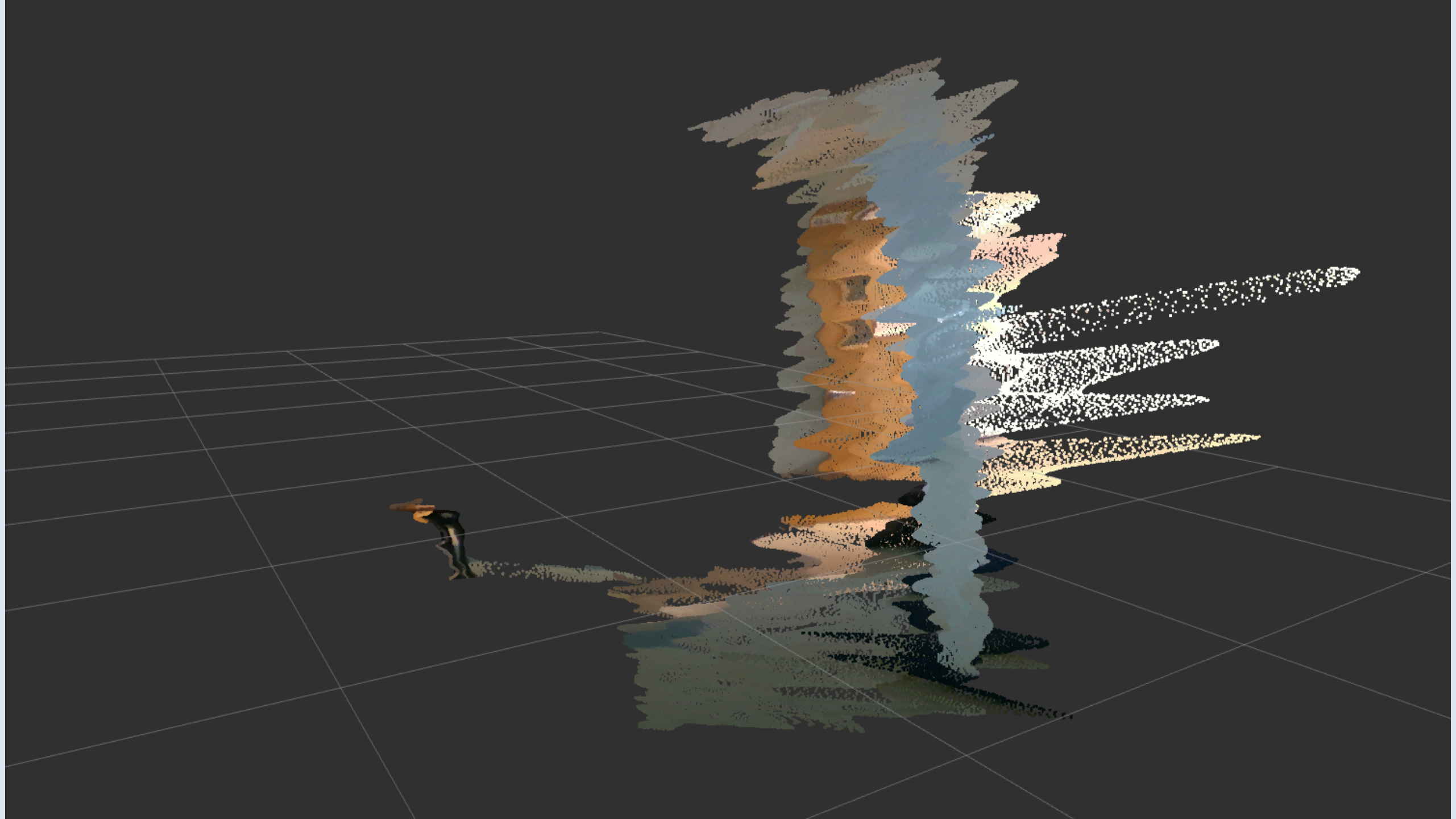


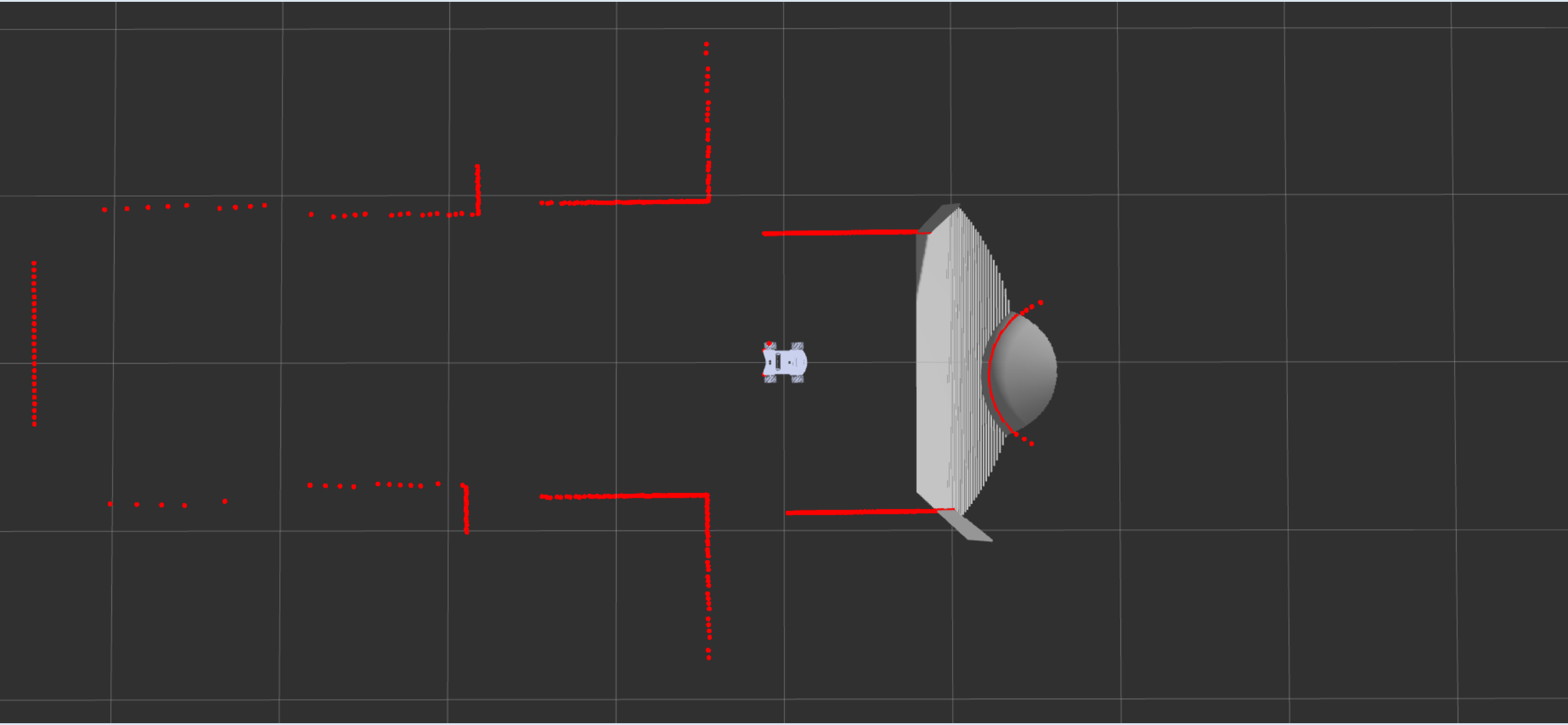


Sensores

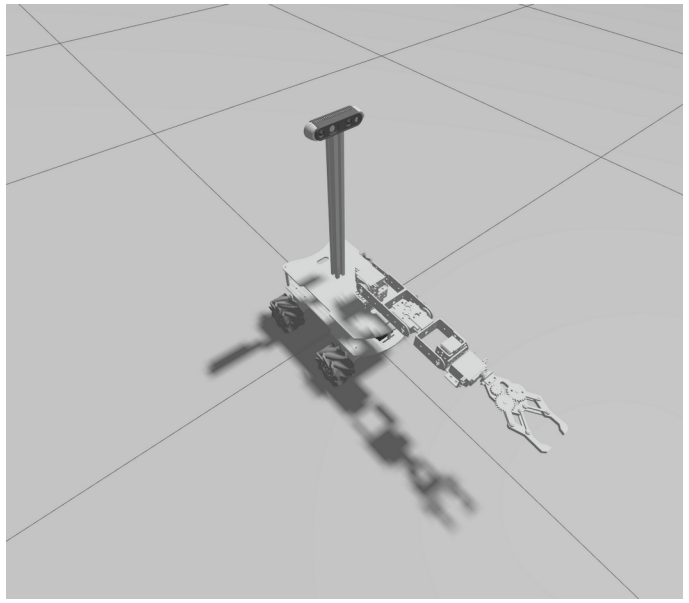
Sensor LiDAR LD19

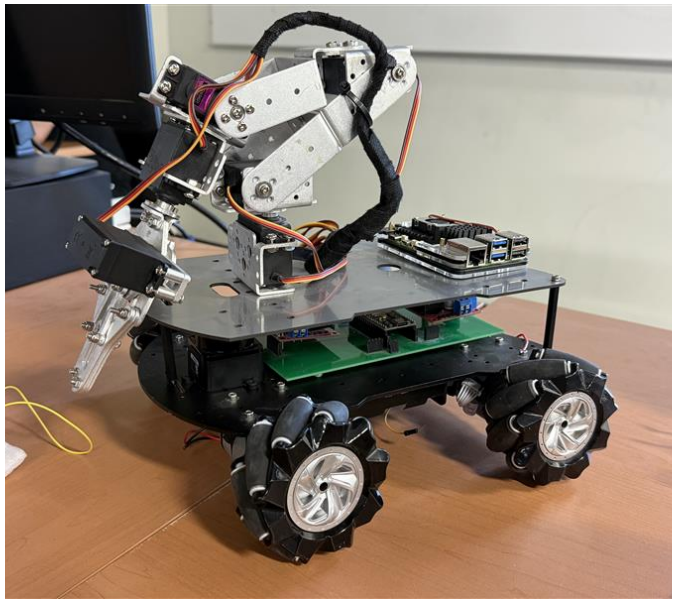
Camara Intel Realsense D415

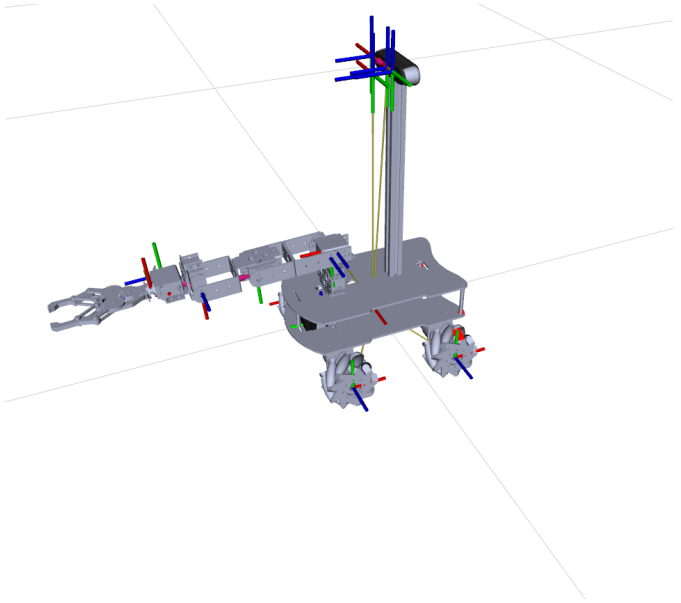


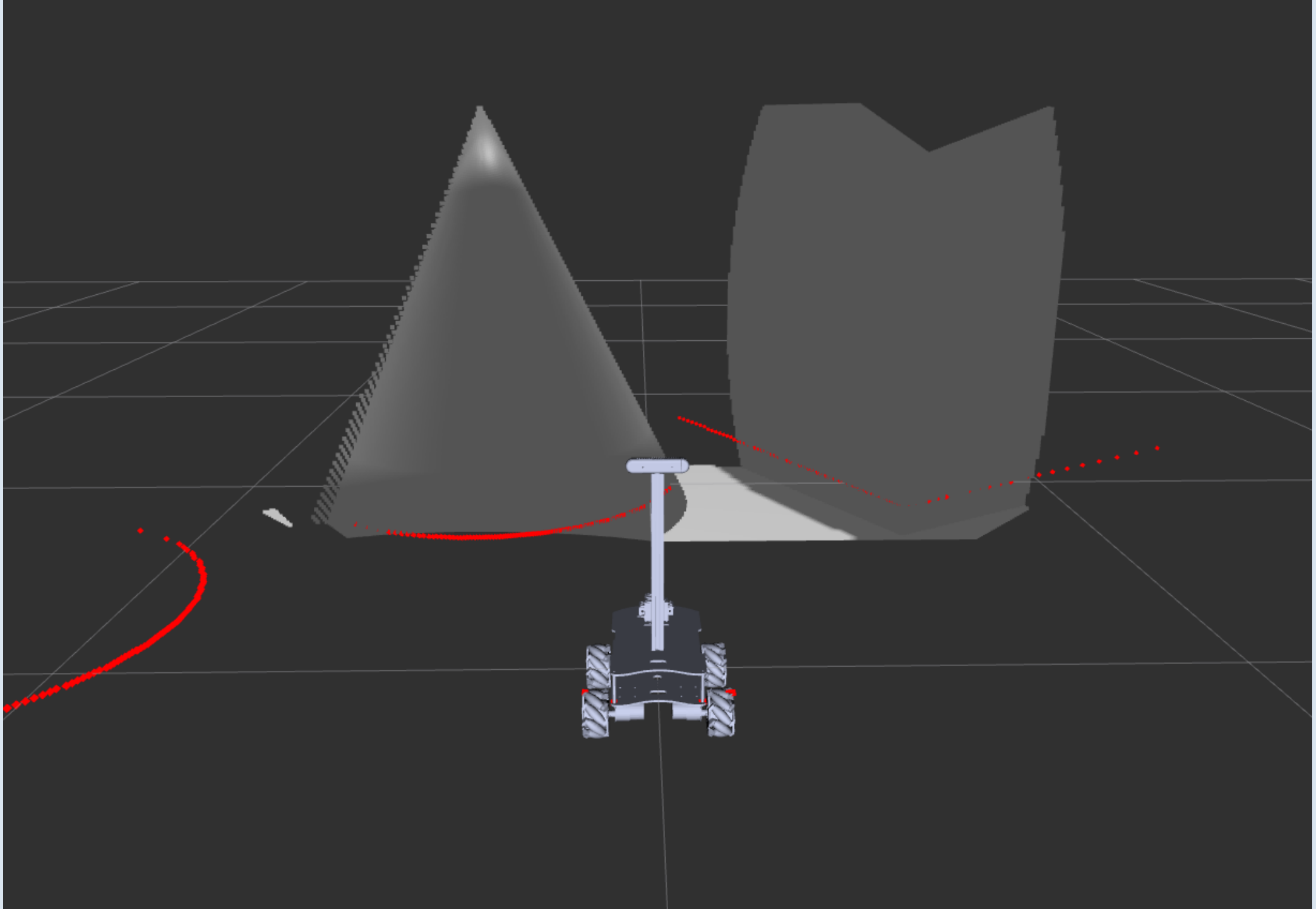


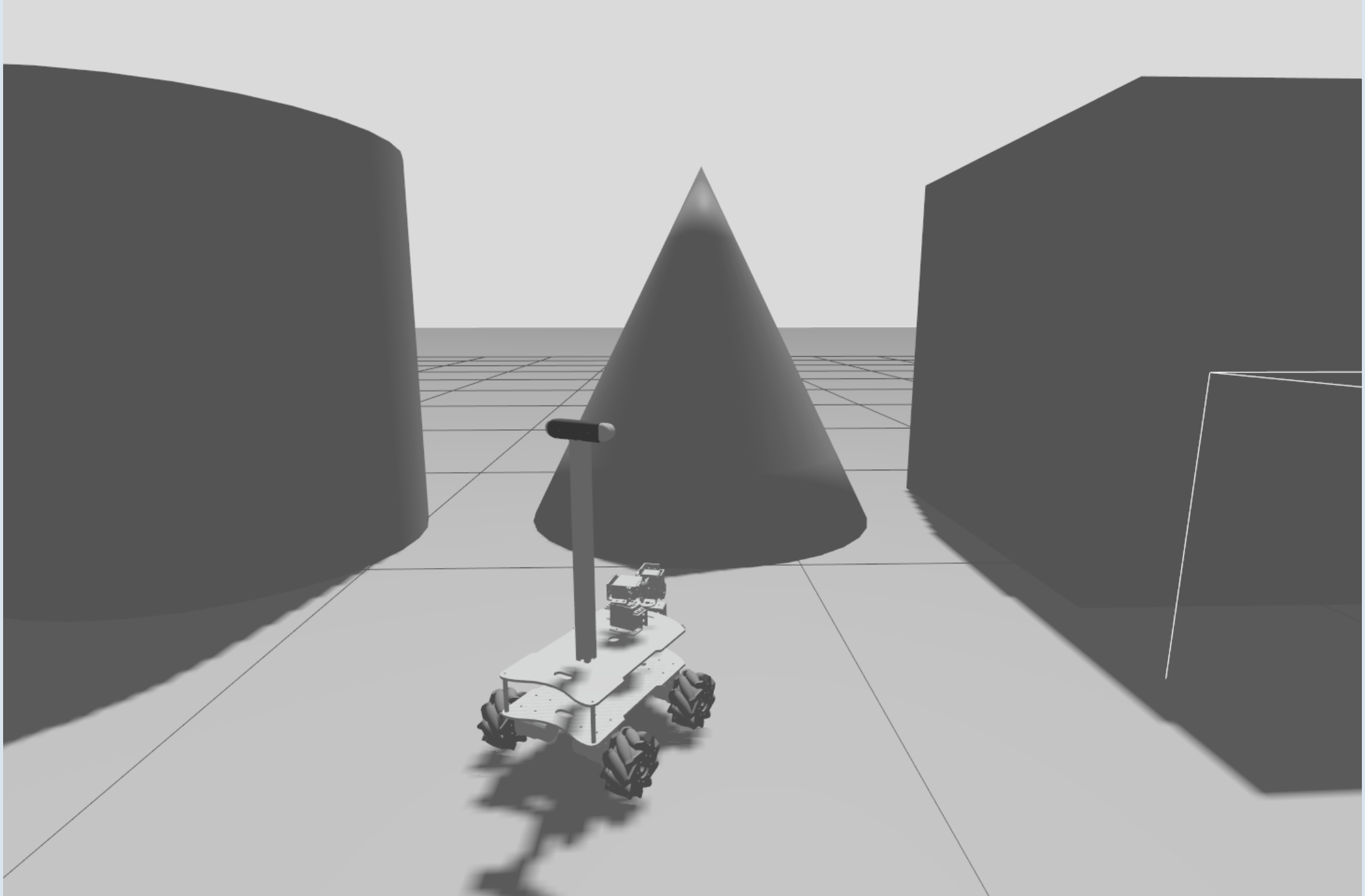
Funcionamiento ciberfísico

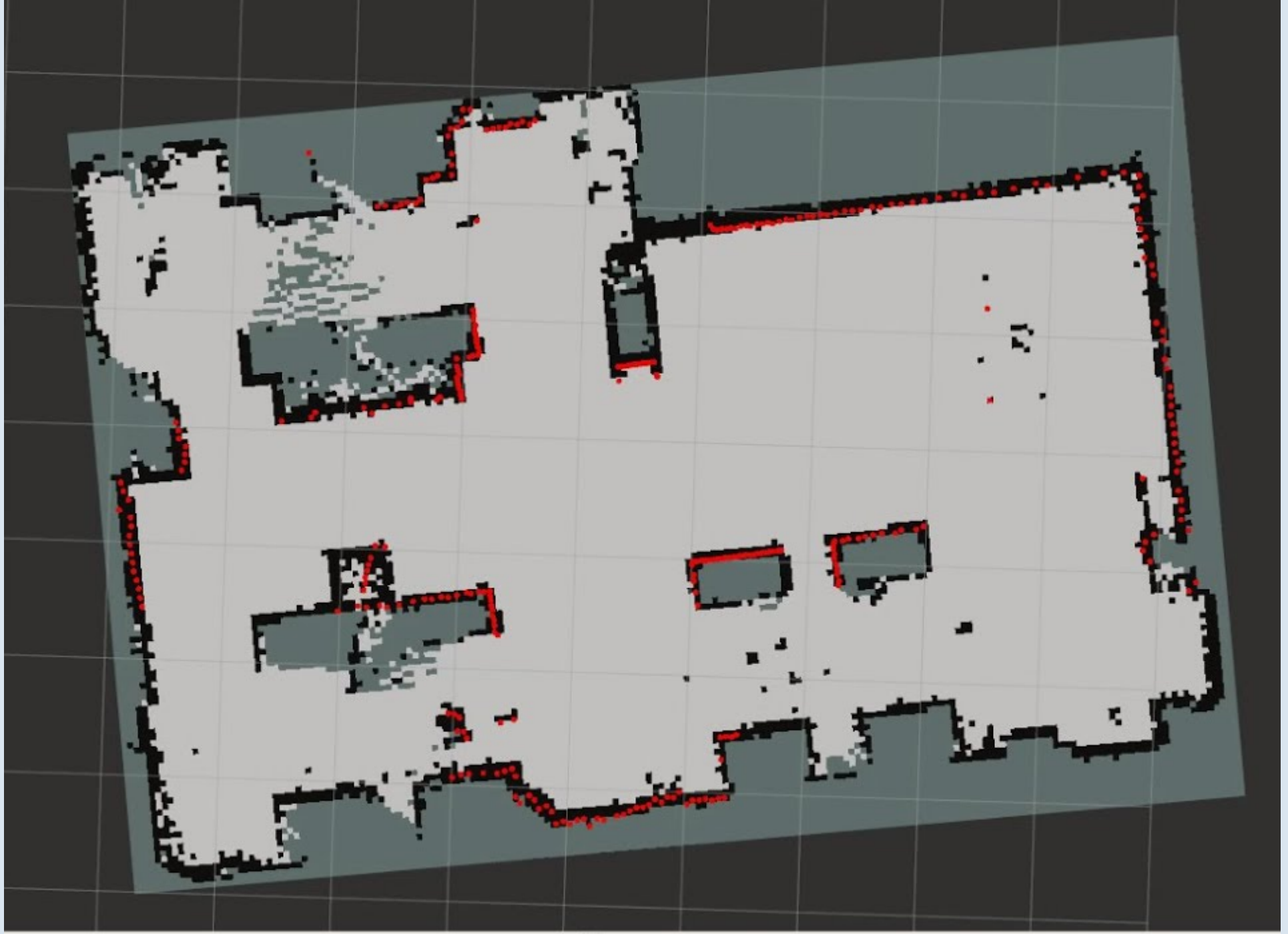












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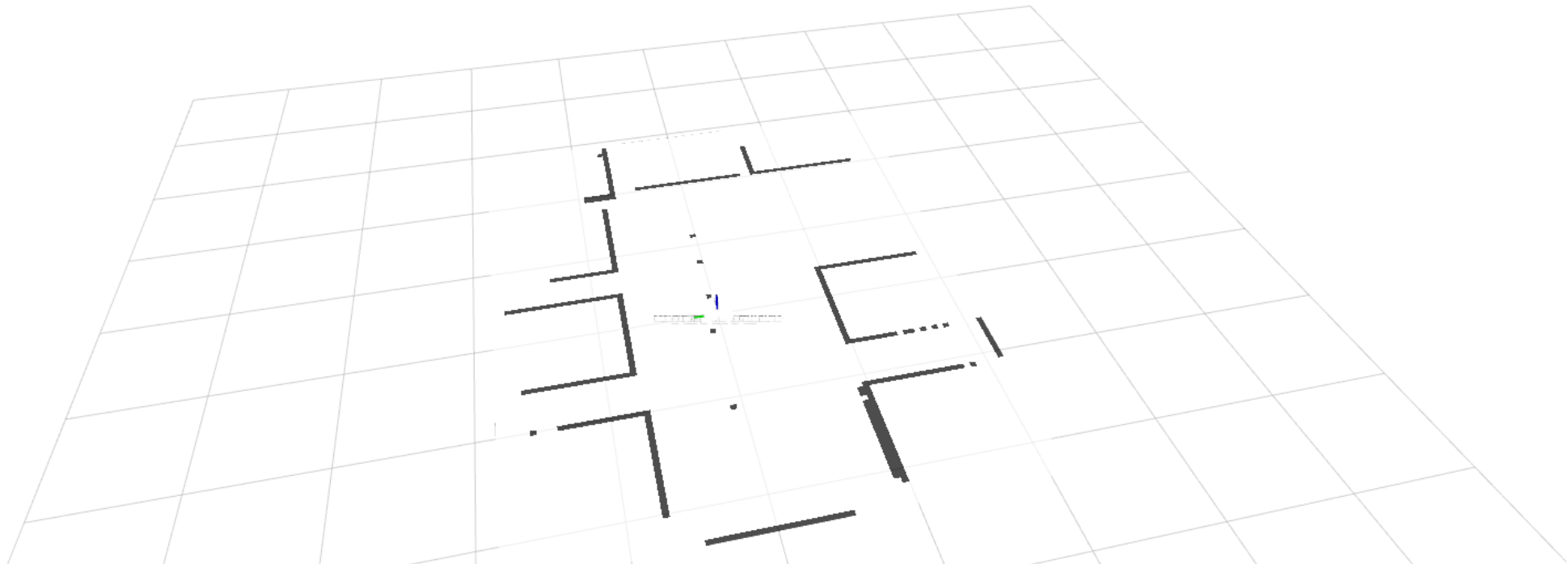

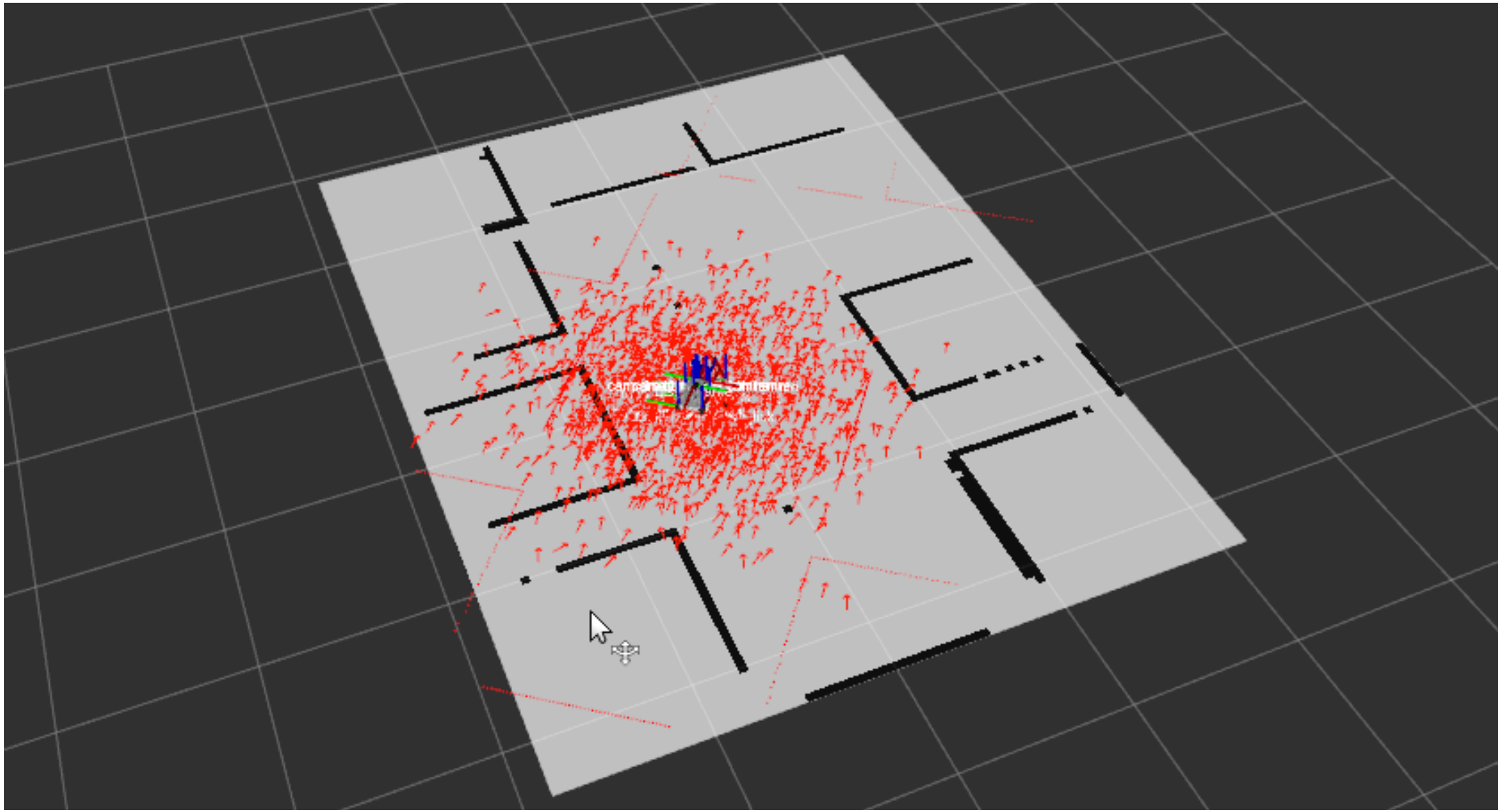

Comandos

- ros2 run micro_ros_agent micro_ros_agent serial –dev /dev/ttyUSB0
- z topic -t "/cmd_man" -m gz.msgs.Actuators -p "velocity: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0]"
- ros2 launch mec_mobile_gazebo spawn.launch.py
- ros2 run teleop_twist_keyboard teleop_twist_keyboard
- ros2 launch mec_mobile_navigation spawn.launch.py
- ros2 launch mec_mobile_navigation localization.launch.py
- ros2 launch mec_mobile_navigation navigation.launch.py

Paquetes

- gz::sim::systems:MecanumDrive
- gz::sim::systems:JointController
- gz::sim::systems:MecanumDrive
- gz::sim::systems:OdometryPublisher
- gz::sim::JointStatePublisher
- Slam Toolbox

Tópicos

- "/clock@rosgraph_msgs/msg/Clock[gz.msgs.Clock",
- "/cmd_vel@geometry_msgs/msg/Twist@gz.msgs.Twist",
- "/odom@nav_msgs/msg/Odometry@gz.msgs.Odometry",
- "/joint_states@sensor_msgs/msg/
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- "/tf@tf2_msgs/msg/TFMessage@gz.msgs.Pose_V",

Tópicos

- "/camera/image@sensor_msgs/msg/Image@gz.msgs.Image",
- "/camera/camera_info@sensor_msgs/msg/CameraInfo@gz.msgs.CameraInfo",
- "/scan@sensor_msgs/msg/LaserScan@gz.msgs.LaserScan",
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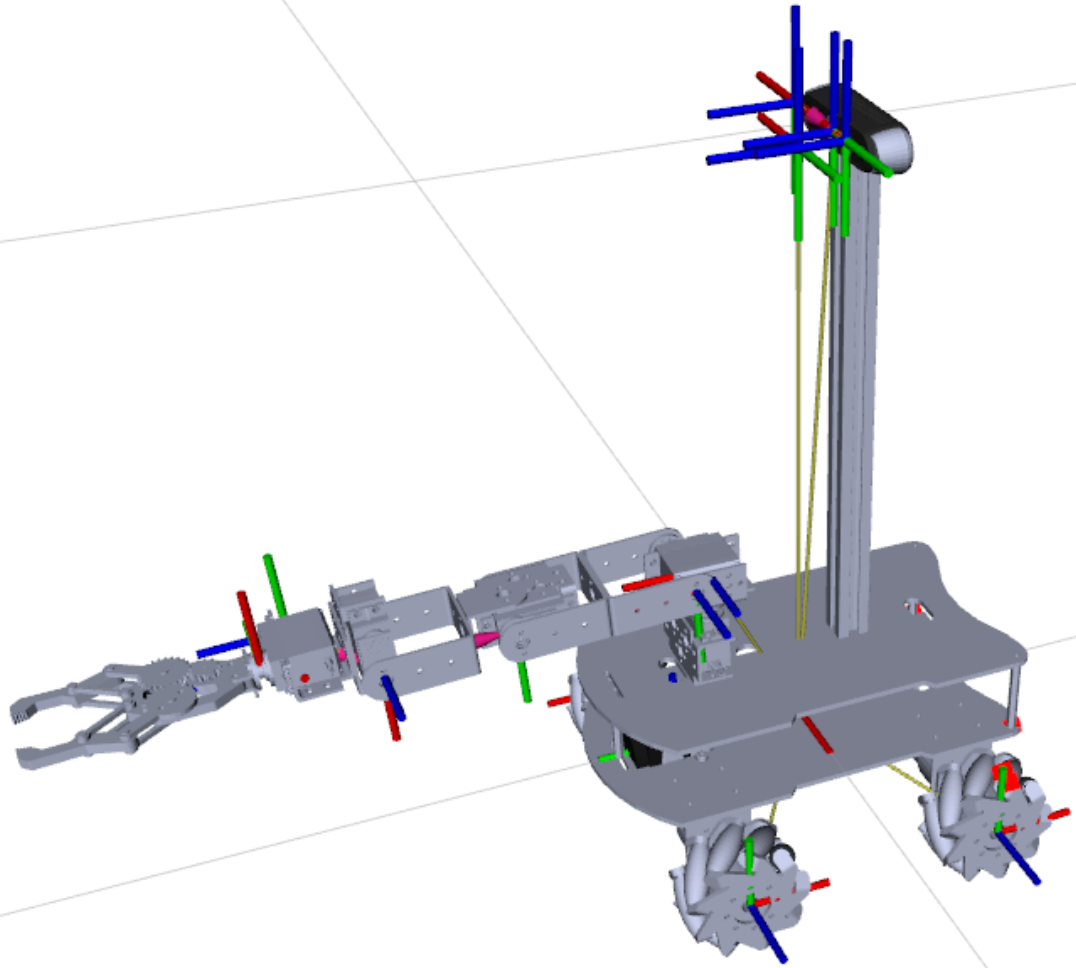

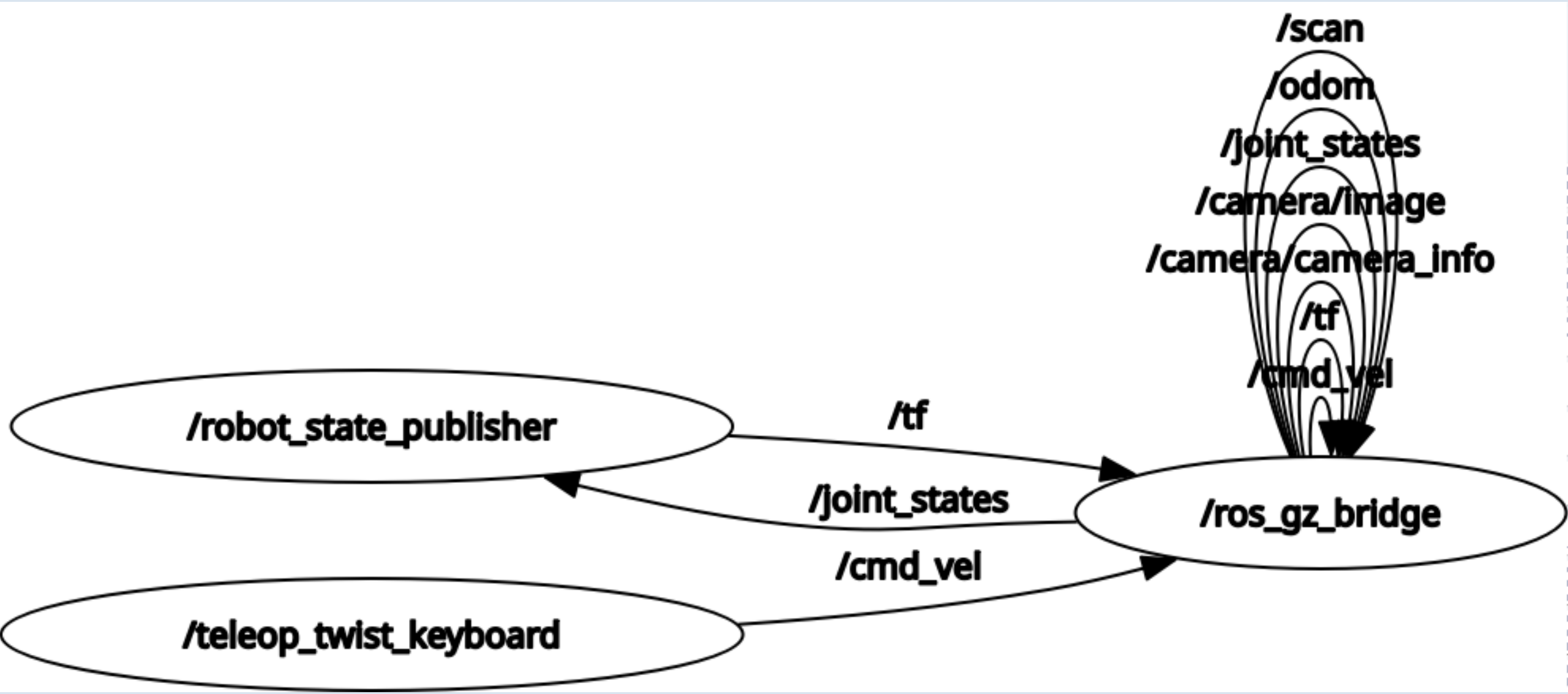
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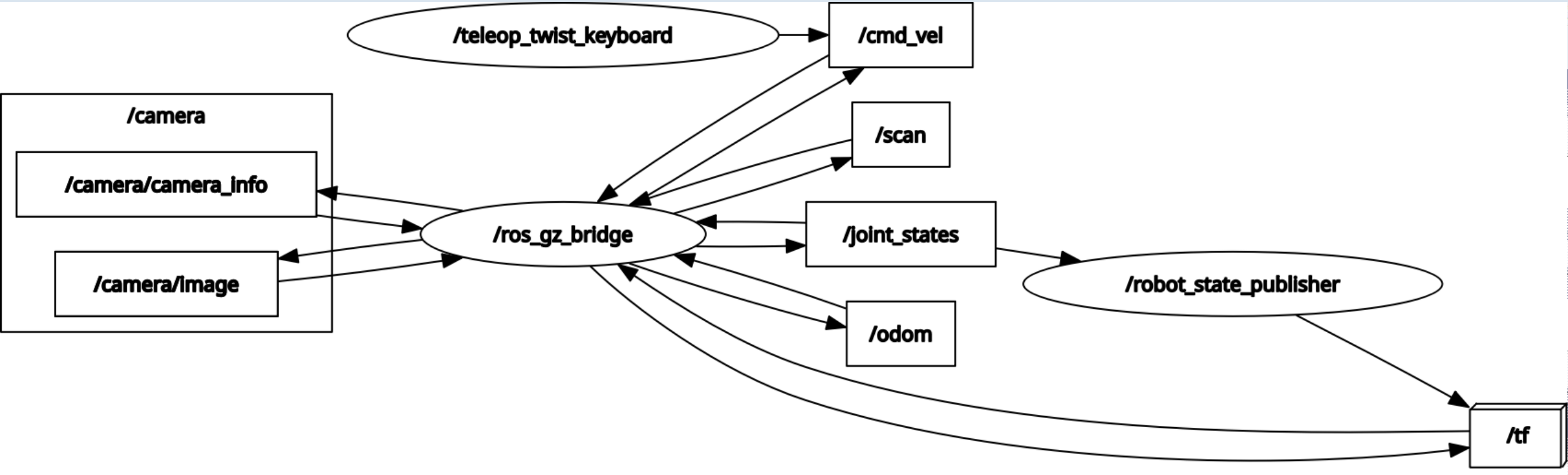
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Gracias