A2-W Simulation Record

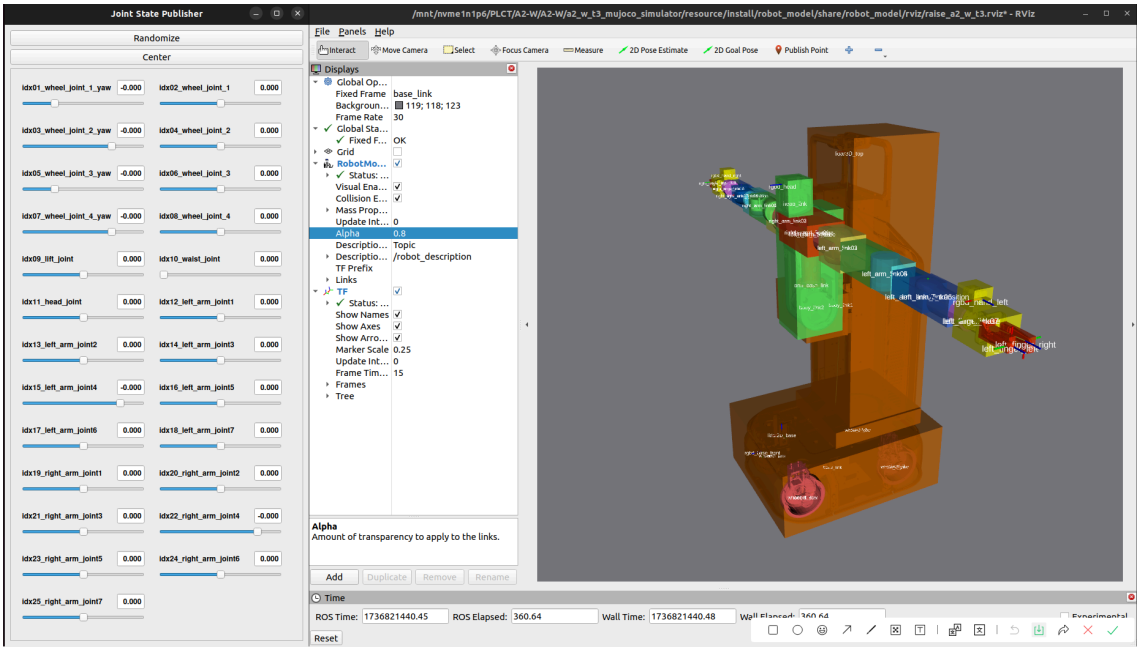
publish robot model to rviz

1. build the package with colcon in folder `resource` :

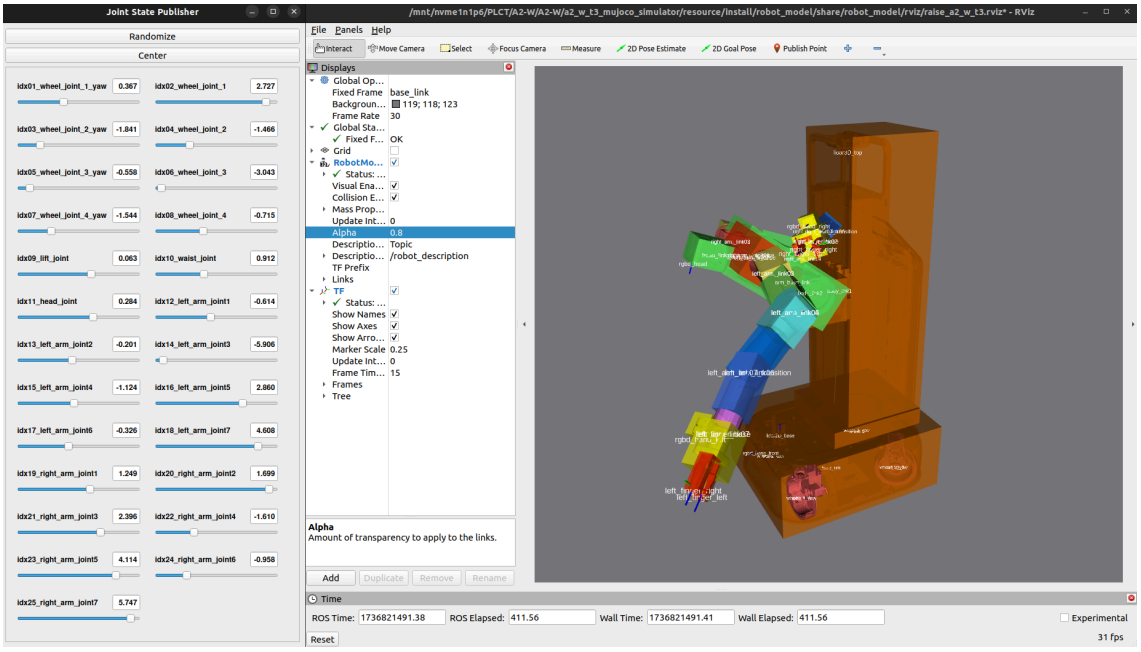
```
cd <path to a2_w_t3_mujoco_simulator/resource>
colcon build --symlink-install
```

2. launch ros2 package `robot_model` to publish robot model

```
ros2 launch robot_model raise_a2_w_t3.launch.py debug_urdf:=true
```



3. able to modify robot state with Joint State publisher gui



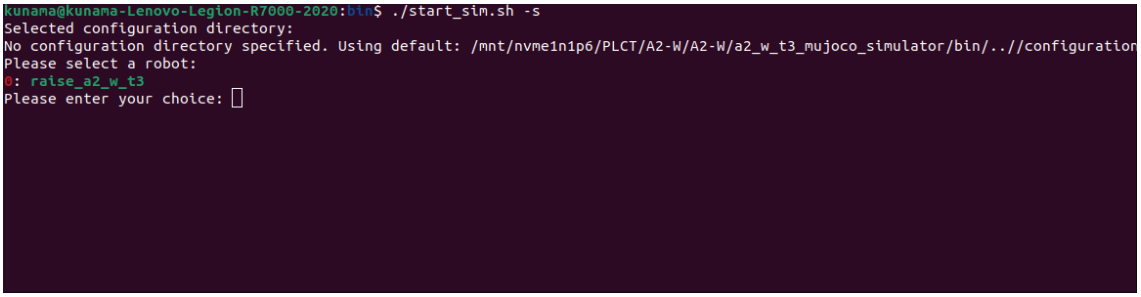
publish robot model to mujoco

1. install gcc-12 and g++-13

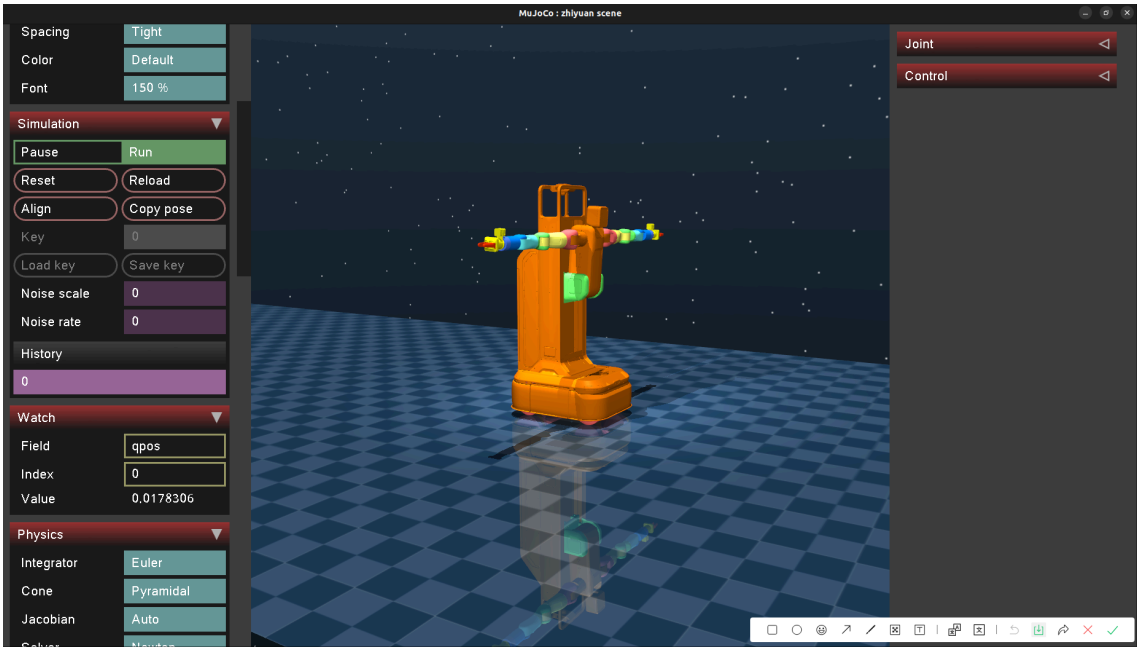
```
sudo apt-get update
sudo apt-get install gcc-13 g++-13
```

2. launch bash script under folder `bin`

```
cd <path to a2_w_t3_mujoco_simulator/bin>
./start_sim.sh -s
```



choose `raise_a2_w_t3`



file structure

```
./a2_w_t3_mujoco_simulator
├── bin
├── configuration
├── git
├── lib
├── local
├── resource
└── share
```

- bin

```
./a2_w_t3_mujoco_simulator/bin/
├── aima-sim-app-main
├── aimrte
├── aimrt_main
├── cfg
├── libaimrt_log_control_plugin.so
├── libaimrt_mqtt_plugin.so
├── libaimrt_net_plugin.so
├── libaimrt_opentelemetry_plugin.so
├── libaimrt_parameter_plugin.so
├── libaimrt_ros2_plugin.so
├── libaimrt_time_manipulator_plugin.so
├── log
├── MJDATA.TXT
├── MUJOCO_LOG.TXT
├── protoc
├── protoc-3.21.12.0
├── protoc_plugin_cpp_gen_aimrt_cpp_rpc
├── protoc_plugin_py_gen_aimrt_cpp_rpc.py
├── ros2_py_gen_aimrt_cpp_rpc.py
├── sim_configuration_directory_cache.txt
├── sim_robot_name_cache.txt
└── start_sim.sh
```

  - `start_sim.sh`

    `mujoco`仿真环境启动脚本

    Key Path:

    - 机器人模型文件位置：`a2_w_t3_mujoco_simulator/resource/model`
    - 仿真执行文件：`a2_w_t3_mujoco_simulator/aima-sim-app-main`
    - 仿真配置文件：`a2_w_t3_mujoco_simulator/configuration/robot/raise_a2_w_t3/simulator/default.yaml`

- configuration

```
configuration/
└── robot
    └── raise_a2_w_t3
        ├── init_parameters
        │   └── default.yaml
        ├──
        │   └── default.yaml
        └── simulator
            ├── default.yaml
            └── default.yaml.dump
```

  - `configuration/robot/raise_a2_w_t3/simulator/default.yaml` `mujoco`仿真配置文件

- resource

```
resource/
├── build
│   ├── COLCON_IGNORE
│   └── robot_model
├── CMakeLists.txt
├── config
│   └── zeros.yaml
├── install
│   ├── COLCON_IGNORE
│   ├── local_setup.bash
│   ├── local_setup.ps1
│   ├── local_setup.sh
│   ├── _local_setup_util_ps1.py
│   ├── _local_setup_util_sh.py
│   ├── local_setup.zsh
│   ├── robot_model
│   ├── setup.bash
│   ├── setup.ps1
│   ├── setup.sh
│   └── setup.zsh
├── launch
│   └── raise_a2_w_t3.launch.py
├── log
│   ├── build_2025-01-14_10-17-05
│   ├── COLCON_IGNORE
│   ├── latest -> latest_build
│   └── latest_build -> build_2025-01-14_10-17-05
├── meshes
│   └── raise_a2_w_t3
├── model
│   ├── environment
│   ├── raise_a2_w_t3_flat.xml
│   └── robot
├── package.xml
├── rviz
│   └── raise_a2_w_t3.rviz
├── terrain
│   ├── flat_ground.png
│   ├── hurdles.png
│   ├── map_invert.png
│   ├── slope_20deg.png
│   ├── stair_16x28.png
│   ├── stepping_stones.png
│   ├── step.png
│   └── wave_heightmap.png
└── urdf
    └── raise_a2_w_t3
```

  - `launch` 启动文件文件夹
    - `launch/raise_a2_w_t3.launch.py`: 机器人模型可视化启动文件
  - `resource/model`机器人仿真模型文件

        - `./robot`: 机器人模型
        - `./environment` 仿真环境
    - `./rviz` `rviz2` 启动配置