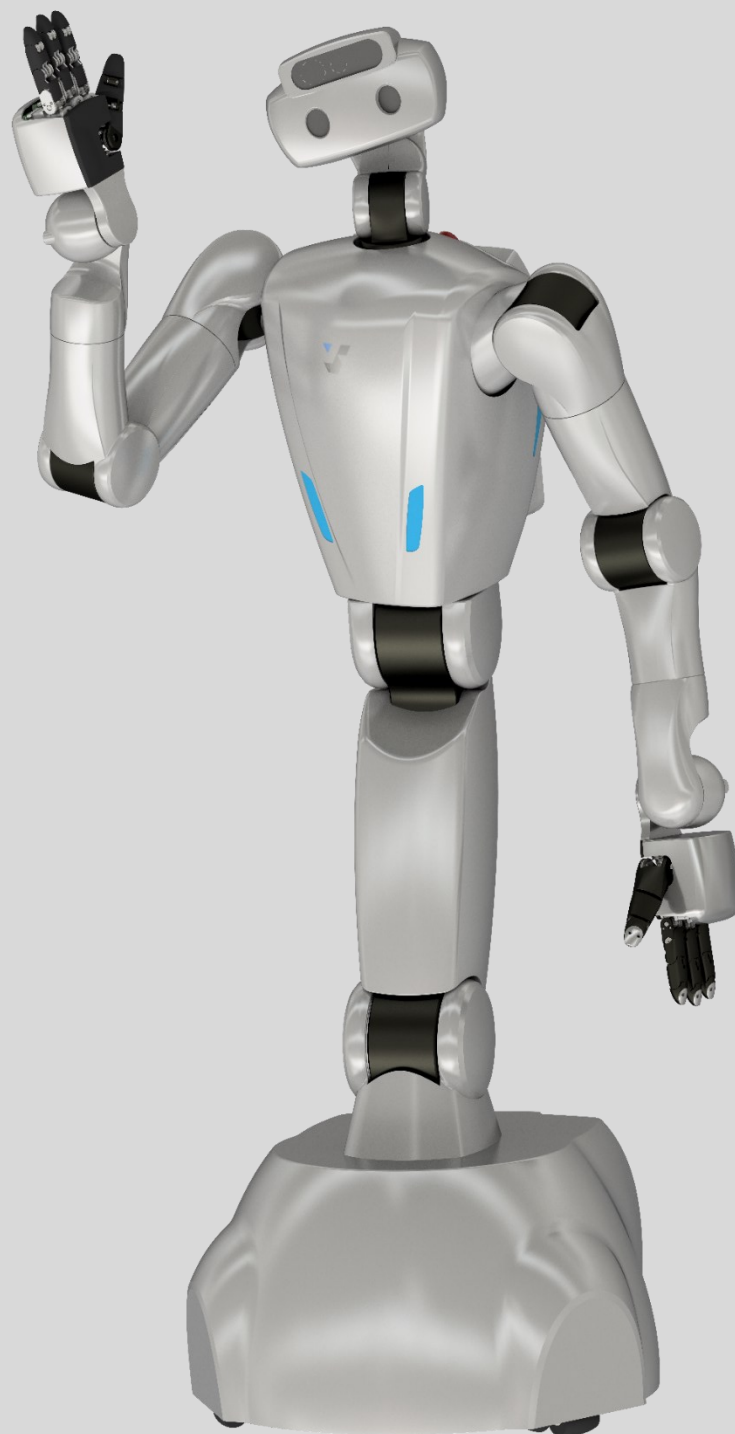


The Humanoid Platform for
Cutting-edge AI & Robotics Research

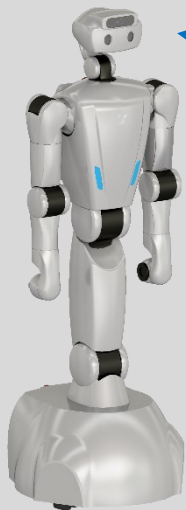
Torobo



“Torobo” is a torque-controlled humanoid

✓ Real-time variable compliance control

Torobo is equipped with high-precision torque sensors, which allows for impedance control on its arm and torso joints. These features not only allow Torobo to perform tasks which requires significant force, but also gentle and delicate operations.



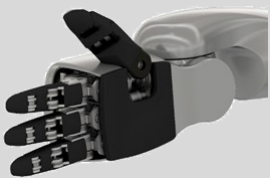
Mounting plate for sensors

- ✓ Users can freely attach sensors such as cameras and LiDARs
- <Option>
Head unit

3 DoF Neck

2 x 7 DoF Arms + 3 DoF Torso

- ✓ High resolution sensors for precise control
 - 20bit absolute encoders (link and motor side)
 - 15bit torque sensors (link side)
- ✓ Safety brakes for keeping its posture when the power goes out



Compact wrist design

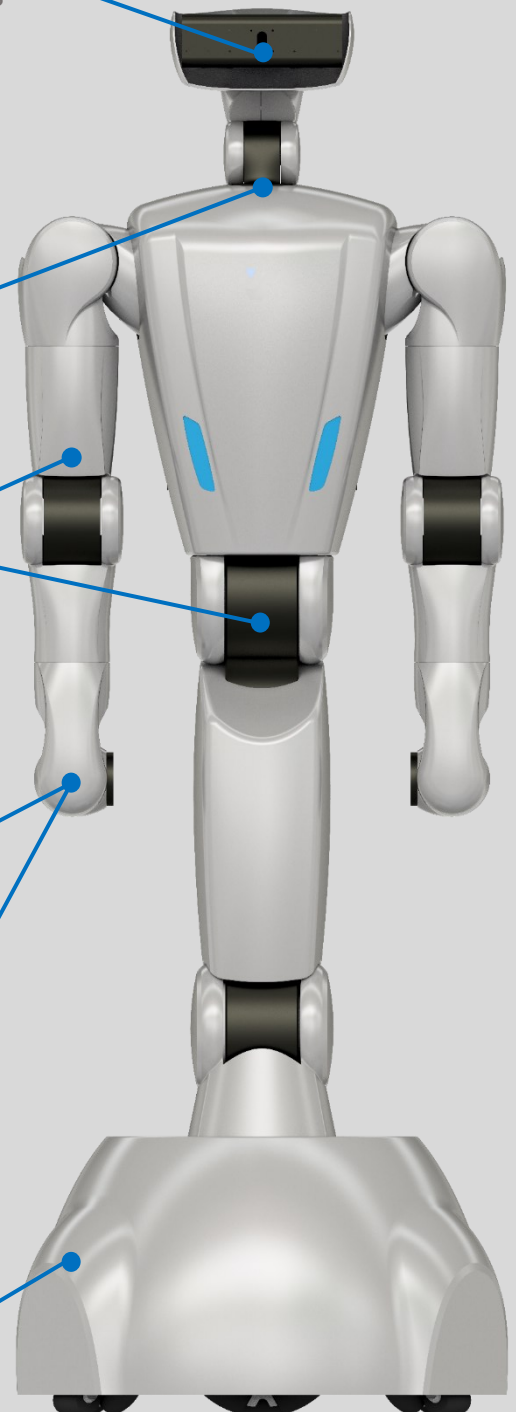
- ✓ Same axes configuration as humans
- ✓ Suitable for robot hand use

Large payload capacity

- ✓ Torobo can hold 7kg payload in the worst posture case with a single arm

Omni-directional mobile base

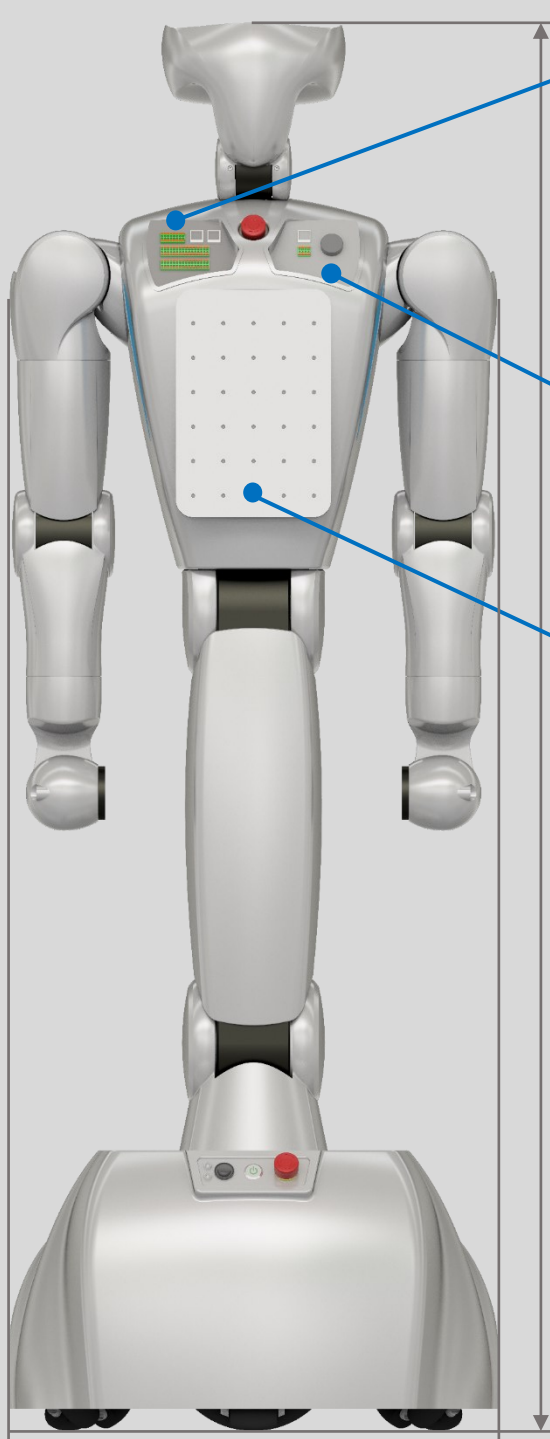
- ✓ Built-in battery (DC51.2V 24Ah)
 - Continued operation while charging is supported



robot suitable for AI & robotics research

✓ A fully integrated system

The two arms, torso, head, and omni-directional mobile base of Torobo are all fully integrated. The adoption of EtherCAT connects each component and enables users to accomplish a variety of tasks with precise motion control.



External terminals

- ✓ Users can connect various devices to expand the functionality of the robot
 - Digital input x8
 - Digital output x8
 - Analog input x8
 - Analog output x8
 - Ethernet

DC24V 600W output terminal

- ✓ Enough power for users to freely use PCs and sensors

Mounting plate for additional devices

<Option>
PC(core i5 13th Gen) with GPU(RTX4070)

- ✓ Equipped with a function to convert power from the battery, so external power supply is not required.

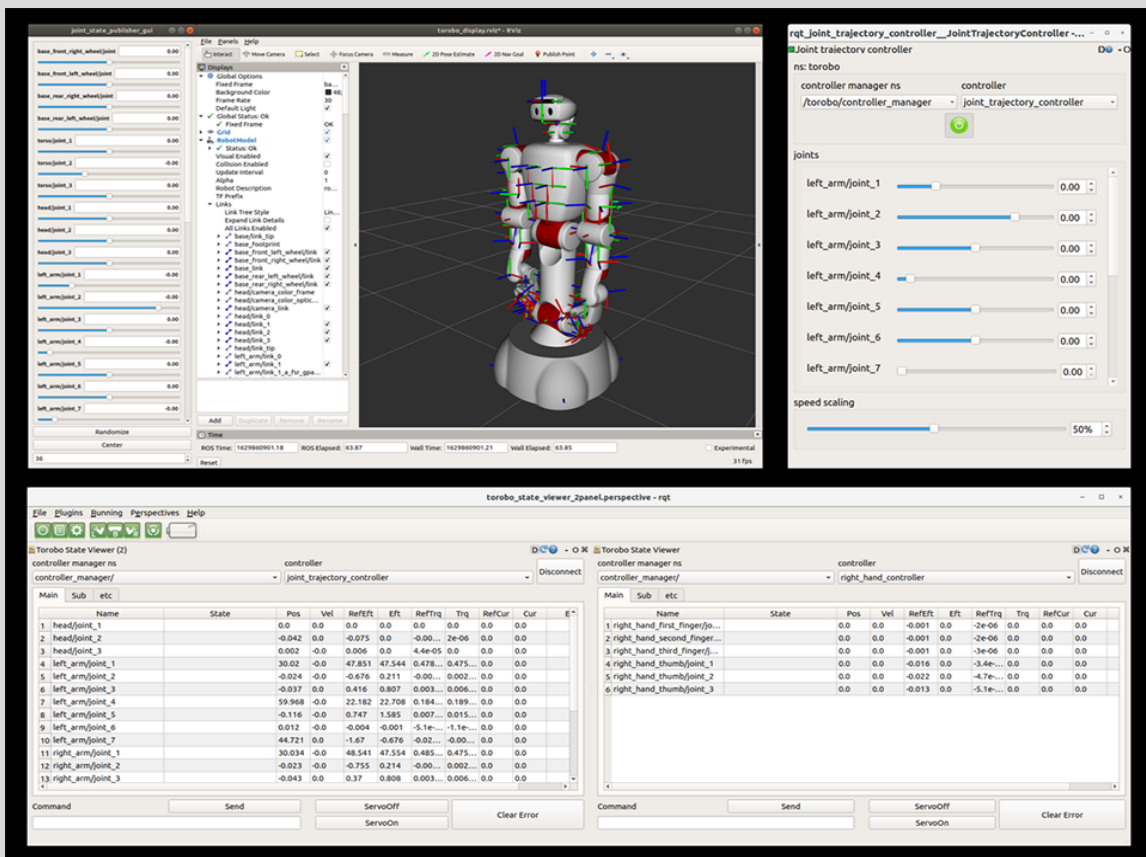
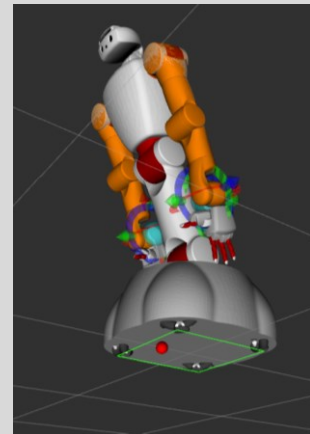
1680mm

590mm

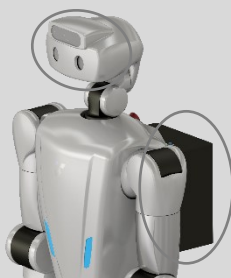
Weight : 125kg
(upper body 55kg + mobile 70kg)

✓ Software development environment

- ✓ Basic control functions are available for accelerating user application development
 - Cartesian impedance control using whole body joints
 - ZMP monitoring to prevent falling down
 - Real-time self-collision monitoring
 - Joint torque and velocity limit
- ✓ Compatible with ROS2, enabling smooth integration with numerous end effectors, sensors and software



Options



Head unit

- RGBD-Camera
- PC with Nvidia RTX 4070
- Speaker
- Microphone



3 finger simple hand



4 finger dexterous hand

