Fourier
Intelligence™

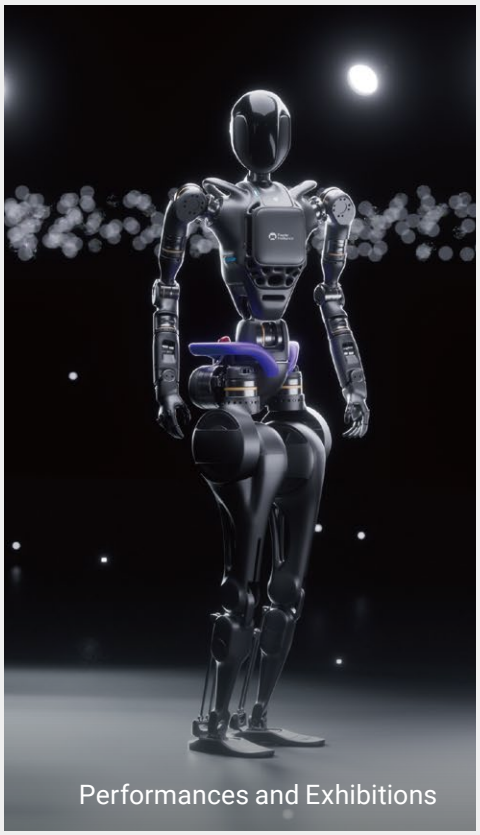
Fourier GR-1

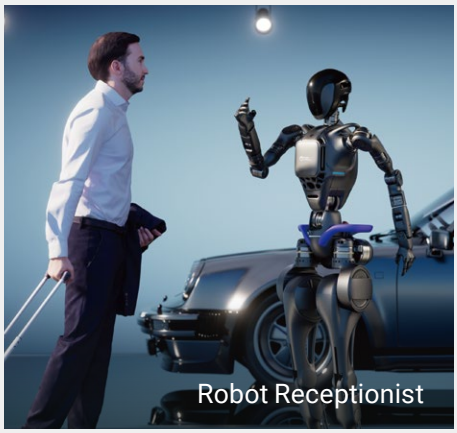
General-Purpose Humanoid Robot

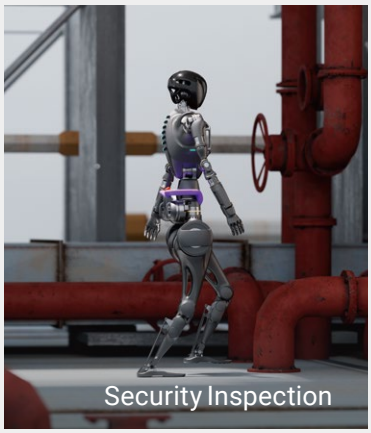
FOURIER GR-1

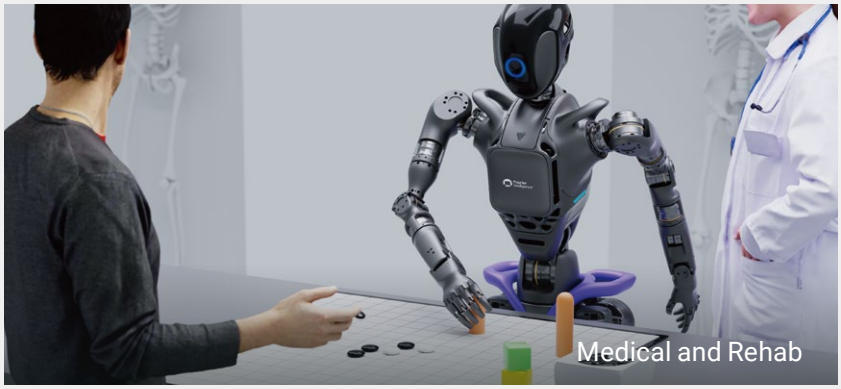
The Fourier GR-1 stands out among its predecessors as the few robots capable of achieving widespread commercial application. With its versatile body structure and advanced motion control capabilities, the GR-1 can execute a wide range of motion with 54 DOFs. Coupled with a peak torque of 230N.m, this enables the GR-1 to excel with high agility and dexterity to avoid obstacles and traverse through various terrains.

Application Scenarios



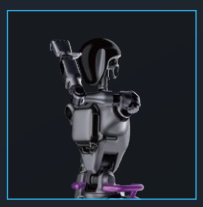


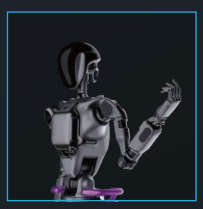




Versatile biomimetic form with up to 54 degrees of freedom

Up to 54 degrees of freedom throughout the body, capable of simulating various human movements, including turning the head, twisting the waist, grasping, running, jumping, and other humanoid motions.



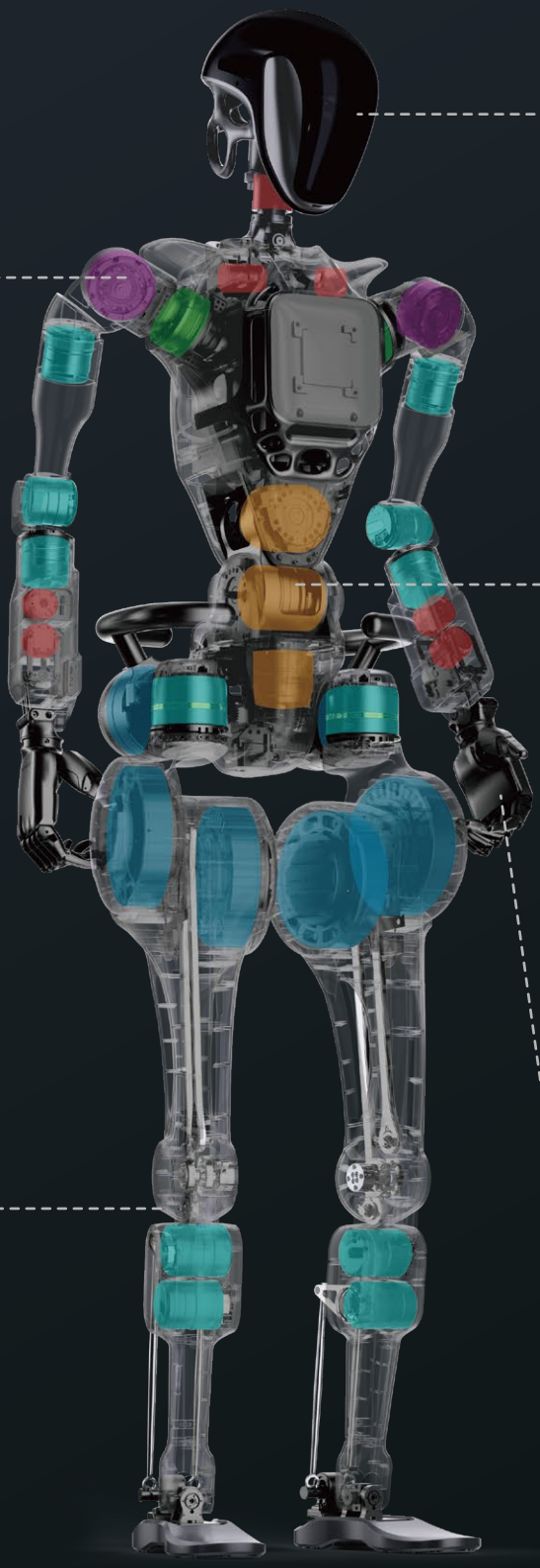


7*2
Arm DOFs

7 degrees of freedom design, end-effector capable of reaching any position and angle in three-dimensional space.

6*2
Leg DOFs

An intricate ankle design to adapt and traverse on various terrains.



3
Head DOFs

Head movement includes pitch, roll, and rotation for flexible perception and interaction.

3
Waist DOFs

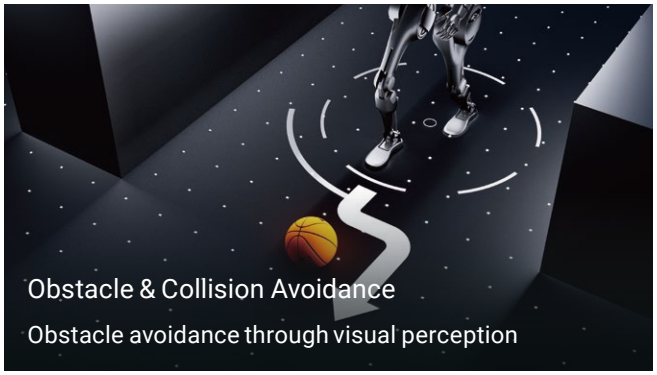
Designed for performing tasks and enables 360-degree observation without movement.

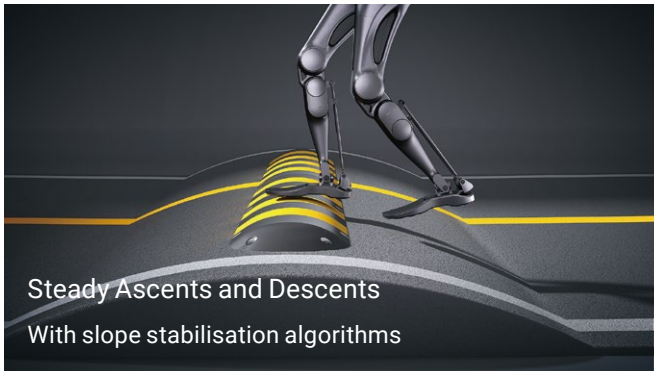
11*2
Hand DOFs

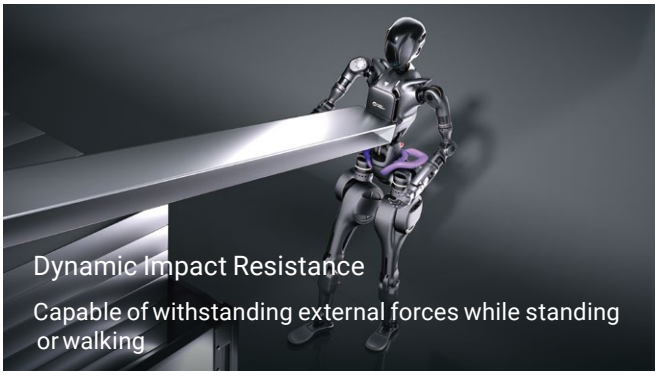
Human-like hand design for versatile grasping.

Dynamic Balance Algorithm,
Highly Adaptive to Surrounding Environments

In unstable, unassisted, and highly disruptive environments, the innovative dynamic coordination self-balance algorithm allows the robot to maintain dynamic equilibrium, expanding its applicability to a wider range of scenarios.

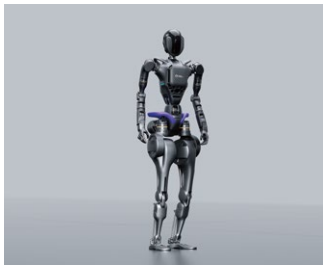






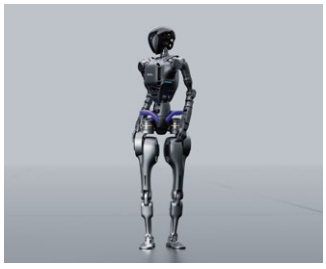
Four motion modes,
With an Extensive Offline Action Library.

Predefined rich action library for twisting, squatting, gripping, etc. in four motion modes: unassisted standing, dynamic locomotion, movements in standing, and end-effector manipulation

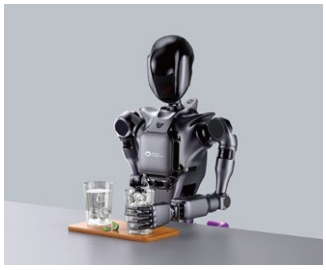


Unassisted Standing

Dynamic Locomotion



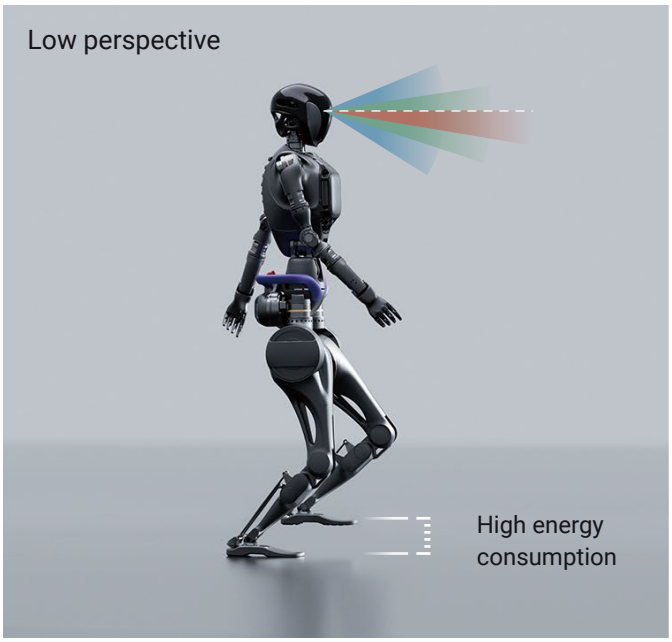
Movements in Standing



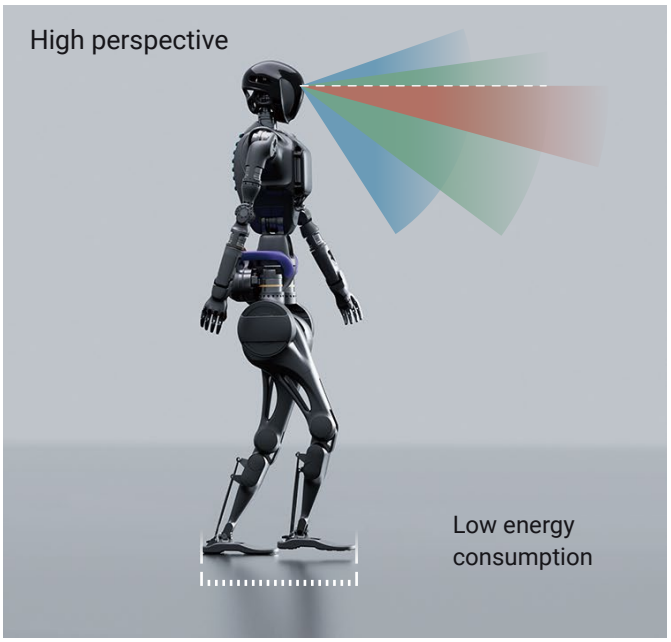
End-effector Manipulation

Human-like Gait, Walking with Straight Legs, Wider Field of Vision and Power Efficiency

The GR-1's motion control algorithm simulates natural human gait patterns, enhancing head stability during walking, giving a wider field of vision, and optimising energy consumption.



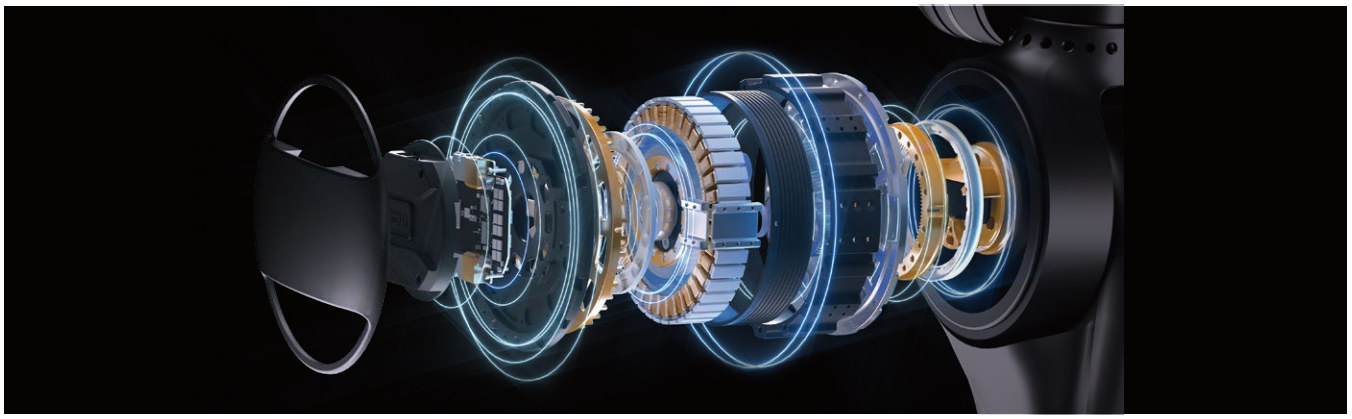
Bent-leg, Raised-leg Walking



Straight-leg, Leg Translation

In-House High-Performance FSA Actuators, Precise Execution of Complex Movements

Incorporating 32 high-performance integrated actuators (including motors, drivers, reducers, and encoders), with a maximum peak torque of 230N.m, high dynamic response capability, achieving precise force control.

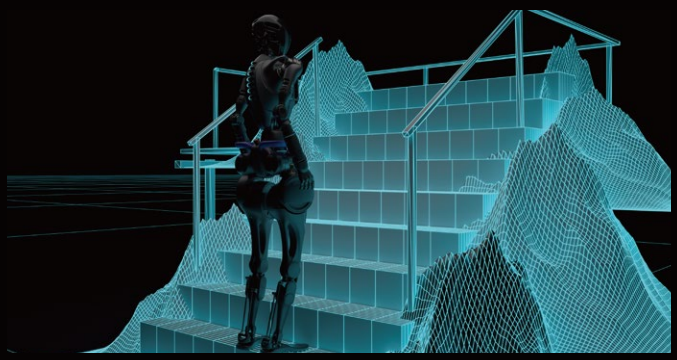


AI-Powered Speech & Visual Processing, Enhancing Human–Robot Interactions

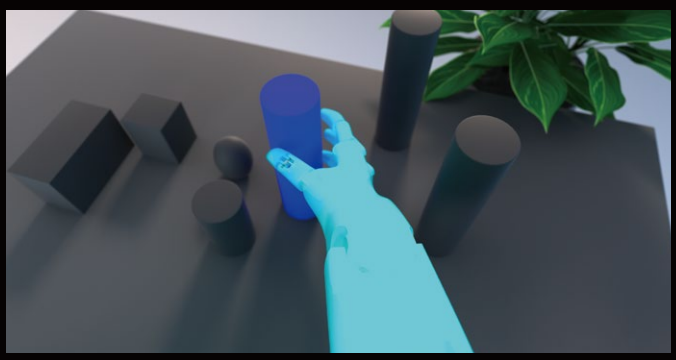
Equipped with a GPT multimodal large language model (LLM) with advanced semantic knowledge, natural language processing, and logical reasoning for automating robot tasks. The LLM enables natural human-robot interaction via the high-definition curved display.

Visual Environmental Perception, Visible Obstacle Avoidance and Grasping.

The depth vision camera, combined with AI vision algorithms, rapidly identifies different objects, providing comprehensive environmental awareness capabilities, including obstacle avoidance and object manipulation.



Visual obstacle avoidance



Visual object manipulation

Open Platform, Accelerating Future Innovations

Its open platform and underlying SDK support further development and innovation by external developers. This allows endless possibilities and collaborations of AI and robotics, helping to solve real-world problems.

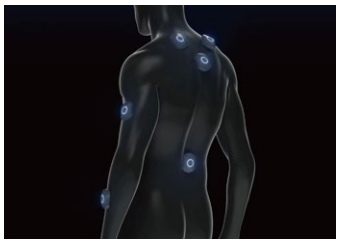
Expandable Hardware, Supporting Infinite Possibilities

Multi-Device Control App, Intelligent Interaction, Easy to Get Started

Supports multi-device control for seamless motion control, high-definition video transmission, and user-friendly control, enabling the user to easily control the GR-1 when required.

Based on Robotic Research Platform
Quantifying Robot Mobility

The roboticresearchplatform Integrates a six-axis motion platform, six-component force plate, adaptive treadmill, dynamic weight support, and motion capture system to conduct research and further development of motion control for GR-1.

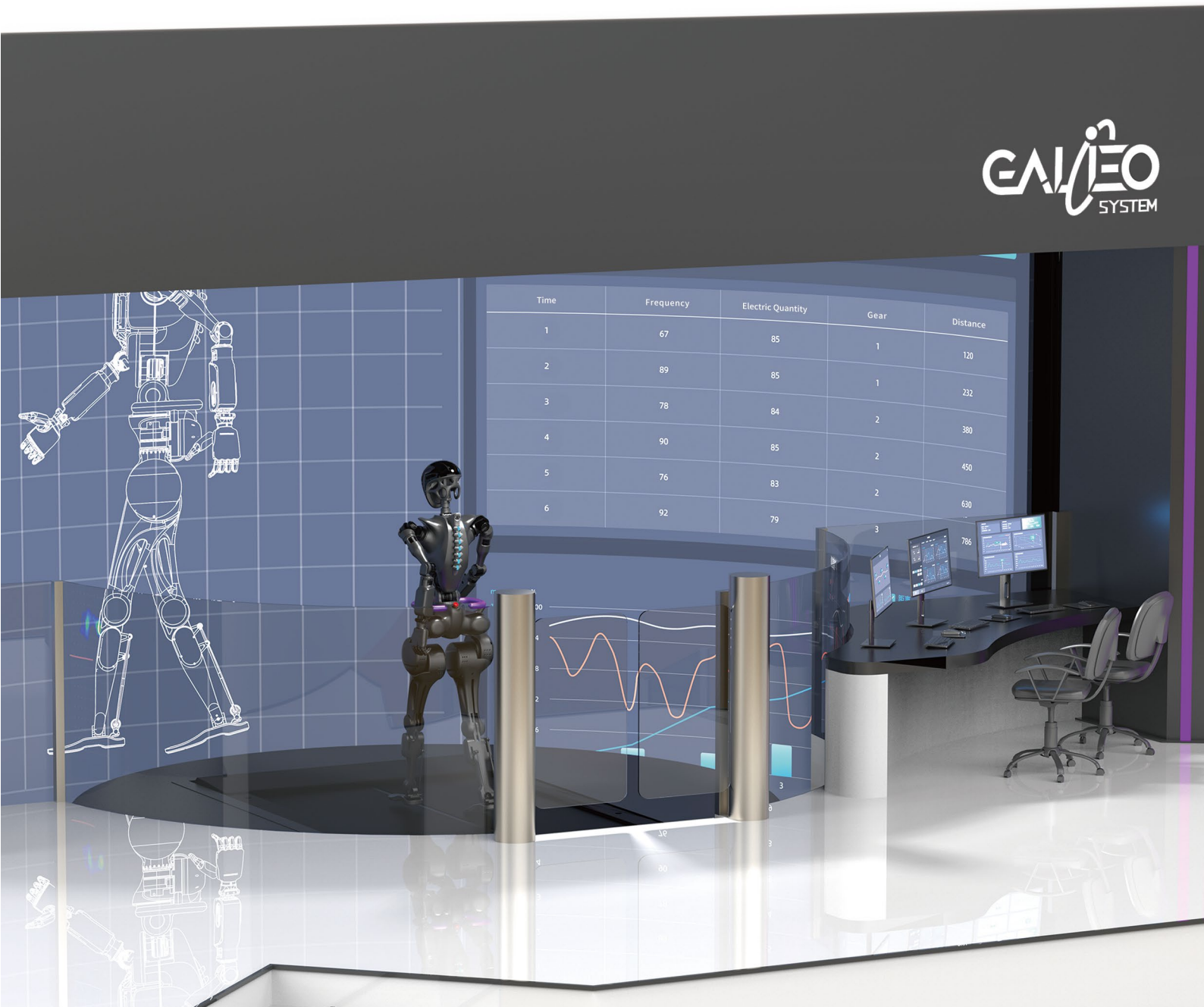


Motion Capture System

6-axis Motion Platform

6-component Force Plate

Dynamic Weight Support



Technical Specifications

Product Model	GR-1L	GR-1	GR-1L Pro	GR-1 Pro
				

Mechanical Specifications

Standing Size	1650X515X320mm	1650X515X320mm	1650X515X320mm	1650X515X320mm
Arm Span	1680mm	1680mm	1665mm	1680mm
Weight	≈55kg	≈55kg	≈60kg	≈60kg
Material	Aluminium alloy + Engineering plastic	Aluminium alloy + Engineering plastic	Aluminium alloy + Engineering plastic	Aluminium alloy + Engineering plastic

Electronic Parameters

Supply Voltage	46.2V	46.2V	46.2V	46.2V
Maximum Power	≈550W	≈550W	≈550W	≈550W

Performance Parameters

Speed	5km/h	5km/h	5km/h	5km/h
Single-handed Payload	3kg	3kg	3kg	3kg
Processing Power	i7-13700h 6P+8E 20thread 1.6/5.0GHz	i7-13700h 6P+8E 20thread 1.6/5.0GHz	i7-13700h 6P+8E 20thread 1.6/5.0GHz	i7-13700h 6P+8E 20thread 1.6/5.0GHz

Joint Parameters

Max Torque	230N.m	230N.m	230N.m	230N.m
Total Actuators	34	44	34	44
End-point Execution	 Gripper	 Dexterous Hand	 Gripper	 Dexterous Hand
Waist Flexibility	3	3	3	3
Head Flexibility	3	3	3	3
Ankle Flexibility	2	2	2	2

Product Model	GR-1L	GR-1	GR-1L Pro	GR-1 Pro

Sensor Parameters

Depth Camera	Realsense	Realsense	Realsense	Realsense
IMU	●	●	●	●
Ring Microphone	—	—	●	●

Features

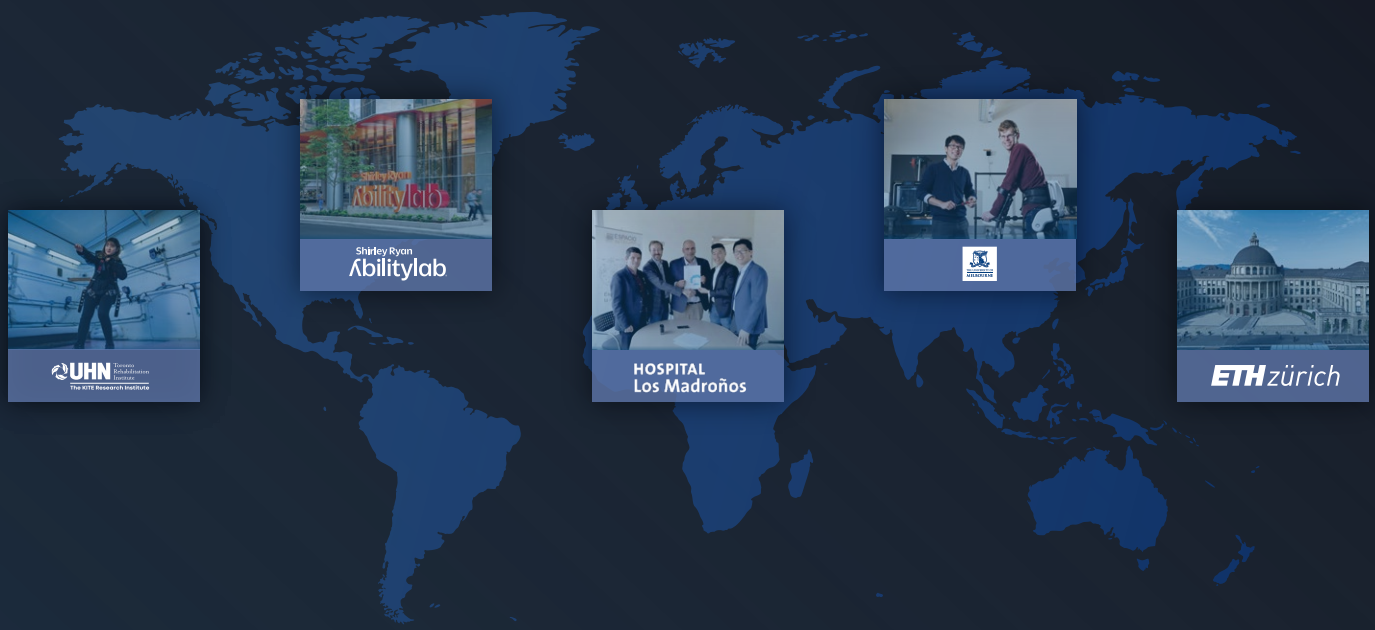
Motion Mode	Static Standing Gait Motion Stationary Movement End Effector Gripping	Static Standing Gait Motion Stationary Movement End Effector Gripping	Static Standing Gait Motion Stationary Movement End Effector Gripping	Static Standing Gait Motion Stationary Movement End Effector Gripping
Protective Casing	Skeleton Casing	Skeleton Casing	Enclosed Casing	Enclosed Casing
Waist Safety Handle	—	—	●	●
One-Click Start	—	—	●	●
Control Terminal	Touchscreen Remote Controller	Touchscreen Remote Controller	Touchscreen Remote Controller	Touchscreen Remote Controller
Voice Control	—	—	●	●
Cluster Control	—	—	●	●
Curved Screen	—	—	●	●
WiFi	●	●	●	●
Bluetooth	●	●	●	●
Secondary Development	●	●	●	●

Battery Life

Battery Capacity	460Wh	460Wh	460Wh	460Wh
Charging	46V 2A	46V 2A	46V 2A	46V 2A

Fourier X Global Robotics Innovation Labs

Fourier Intelligence collaborates with renowned institutions worldwide and has a presence in 56 countries.



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