

DEEPRobotics
云深处科技

Dedicated to the ultimate combination
of locomotion and intelligence to build a bright robotic future



To Reach Us

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Jueying X20

***Hazard Detection
Rescue Solution***

Fearlessly Conquer Crisis Like A Shadow By Your Side

DEEP ROBOTICS

Leading the
Industrial Application
Quadruped Robot in Asia



Founded in Nov 2017, New Hi-tech enterprise; master core components, motion control, and sensation algorithm

The first domestic quadruped robot with autonomous navigation and intelligent interaction (Jueying Pro 2018)

The first domestic quadruped robot with autonomous self-charging (Jueying 2019)

The first domestic quadruped robot with IP66 protective class certification (Jueying X20 2021)

The first domestic quadruped robot completed a full autonomous inspection of a 25,000m² substation (Jueying 2021)

The first domestic robot dog inspection in a 500KV underground cable tunnel on behalf of humans (Jueying 2021)

History: Road to Industrial Application

1. One Jueying X20 completed 25,000m² substation inspection
2. First unmanned 500kv capable tunnel inspection



1. Jueying Mini completed factory inspection stimulation on HUAWEI HC conference.
2. DEEP Robotics became "HUAWEI Cloud-ecosystem partner"



Jueying on cover of
Science Robotics



2018
Jueying Pro



2021
Jueying Lite2、Jueying X20



2020
Jueying Mini



2019
Jueying

2017
DEEP Robotics founded

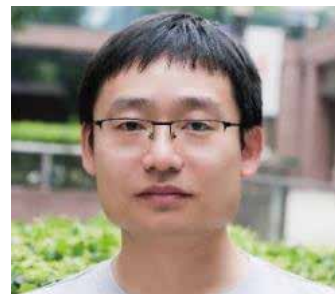
COMPANY PROFILE

Global Media News

Cover of the global authoritative journal *Science Robotics*



Core Team



Li Chao
Co-Founder CTO

Zhejiang University Ph.D.
The first youth award winner of 2050 conference in 2018
Huawei Global Ascend Expert (2020)
Hangzhou E-class talent



Zhu Qiuguo
Founder CEO

Zhejiang University Ph.D.
Executive Chairman of the 28th IDC Robocon
Owns more than 30 authorized invention patents
Authorized 2 US invention patents



Chu Jian
Strategic Advisor

Researcher of Control Science and Engineering, Zhejiang University
Founder of Supcon Technology Group
Expert in Industrial Automation



Ge Liezhong
Strategic Advisor

Professor of Psychological Science Research Center, Zhejiang University
Chinese Psychology Association
Chairman of Engineering Psychology committee

Partners & Clients

Top ranking institutions, companies, and universities



(NO PARTICULAR RANKING ORDER)

Staffs are mainly PhDs and Masters from Zhejiang University, Harbin Institute of Technology, The University of Michigan, Georgia Institute of Technology, and other well-known universities. The R&D member ratio of the team is more than 60%

CHALLENGES

Unique Advantages of the Quadruped Robot

Phenomenon



Manual Detection



Traditional robot Detection

Operation Risks

Certain levels of leaking gases like carbon dioxide, hydrogen chloride, etc., and falling objects, electric shock may cause injuries to the human body.

Insufficient Info

Post-disaster scenes often contain excessive levels of smoke, that extreme condition may cause limited vision, in which rescuers and the command center will receive insufficient information.

Adaptability Limits

With the weak adaptability to complex terrains such as debris, rubble piles, and steps that traditional robots are difficult to cross over large obstacles to get into the core area.

Weak Agility

Traditional robots are difficult to make turns on complex terrains, it also has low speed, low flexibility, and greater chances to step on stranded victims or cause damage to the original environment.

DETECTION SOLUTION

Modules (Customizable for particular needs)

Bi-Spectrum PTZ Camera
30x zoom in and detect tiny objects from far away, track heat source through dense smoke to gating temperature data.

Omnidirectional Camera
Collect and deliver post-disaster scenes in real-time from all angles

LiDAR
Quickly build 3D map of the post-disaster environment, provide visible info; allows self-pathing and dynamic avoidance.



Sound Pickup
Receive sounds and build connections to make rescue call with victims.

Mesh Network
Build connection between the base station and robot for long-distanced transmission.

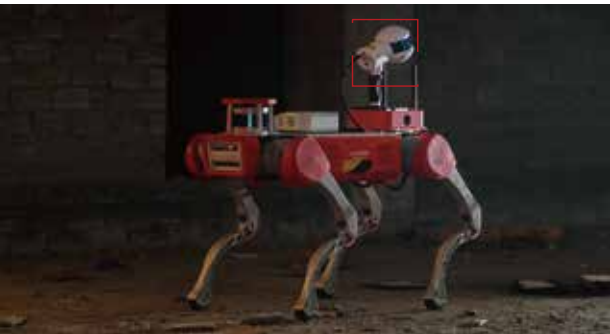
Gas Sensor
Automatically detect plenty of types of gas and its density.

Jueying X20
Hazard Detection & Rescue Solution

Rotating Laser Scanner (Optional)



Rotating Laser Scanner
Collect high-precision point cloud map data of the scene to provide crucial evidence for investigating underlying reasons.



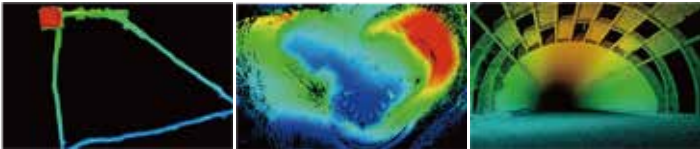
Jueying X20 Hazard Detection & Rescue Solution



Building

Parking lot

Forrest



Mining

Large Stockpile

Tunnel

	Wheel	Track	Quadruped
Ruins & Rubble Piles	×	×	✓
High Degree of Stair	×	×	✓
Agility	Limited	Limited	Flexible (Rotate, Side Walk)
Ground Contact Area	Large	Large	Small
Indoor to Outdoor	×	×	✓
Falls Auto-Recovery	×	×	✓

Jueying X20

Hazard Detection & Rescue Solution

Net.Weight	55kg
Stand-up Size	1000*450*800(mm)
COMM Range	BVR 3km
Ingress Protection	IP66
Max. Speed	18km/h
Sensation	Target analysis 3D mapping Dynamic avoidance
Surmounting Abilities	Climb unstructured ruins, debris & rocks. 20cm Steps. Slop >35°
Work Duration	2-4h
Max. Payload	20kg (continuous worktime > 2h)

All-Terrain

Able to cross over 20 cm high obstacles and stairs, 30° slopes, and move freely on unstructured surfaces such as debris, rubble piles, gravel, and grass. Omnidirectional, flexible, and light contact to the surface to avoid changing the environment; lower the chance of secondary accidents.

All-Weather

IP66 protection, in the dense smoke, toxic gas, rains, frigid temperature, hail, and other extreme conditions to complete rescue tasks.

Avoidance

Equipped in-depth camera and LIDAR with advanced AI algorithm to achieve dynamic obstacle avoidance.

Assistance

Able to do heavy-loaded tasks, carry supplies into the disaster area to assist the rescue mission.

Smart Detection

Omnidirectional imaging & thermal display, sense harmful gases, scan pathways, etc.

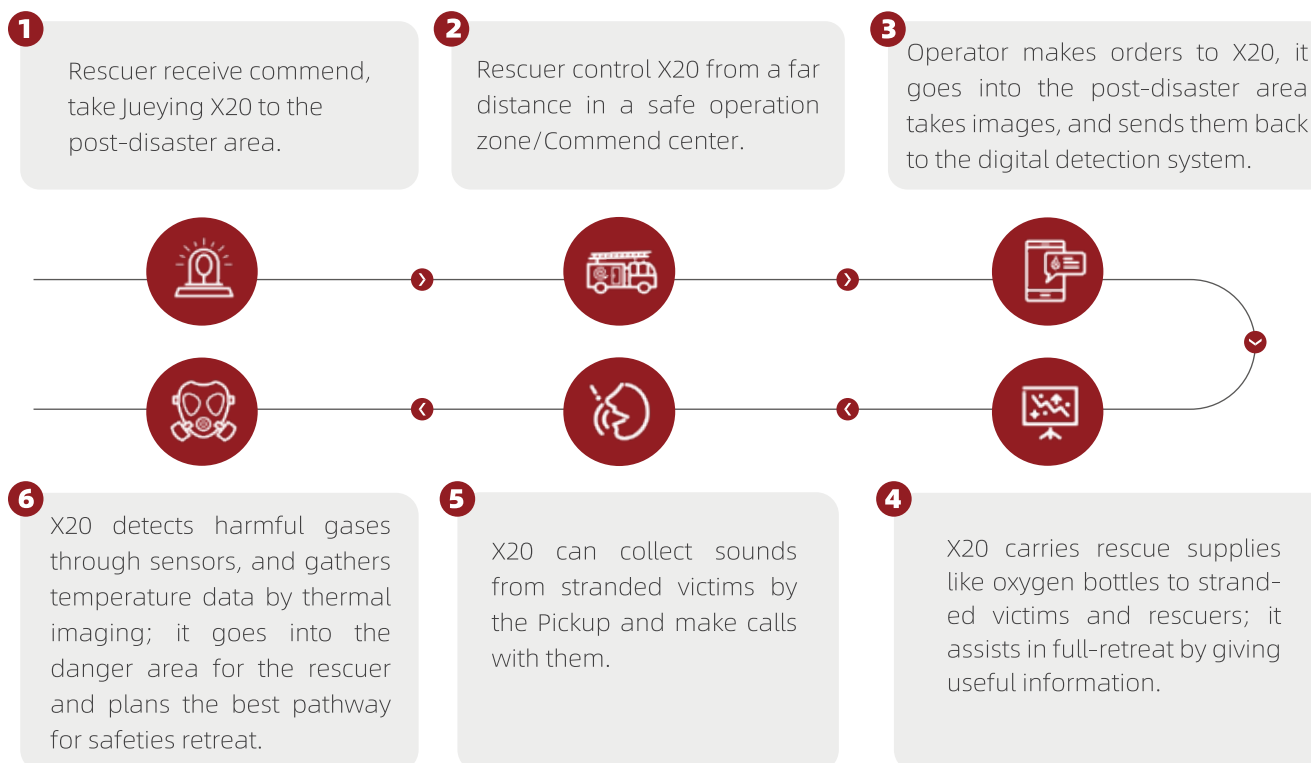
3D Stimulation

Long-range image transmission, full-scene scanning, build cloud maps to display the real-time environment, providing accurate visual information for correct rescue decisions.



Efficient Indoor & Outdoor Rescue Mission

Detection & Rescue Work Flow



It goes into extreme environments such as toxic, hypoxia, collapsed buildings to operate detection, rescue, supplies transition, also it helps to reduce the occurrence of secondary accidents.



It can trot on unstructured surface and goes into complex environments that drones and traditional robots can't go.

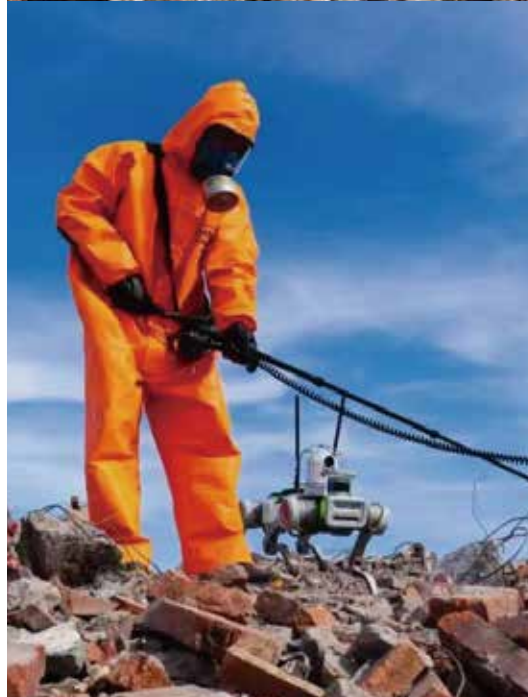


It can complete both indoor and outdoor rescue mission; also work under extreme condition like downpour, dust storm, frigid temperature and hail



It provides accurate information like real-time images from all directions, thermal images, and data of harmful gases to the smart digital system, it able to zoom in on tiny objects in 30x, and build 3D map of the original environment.

- FIRST QUADRUPEL ROBOT
- IN NATIONAL EARTHQUAKE DRILL



“Emergency Mission-2022” drill

Jueying X20 has participated in a national earthquake relief drill in Gansu province, one of the Jueying equipped a **Mesh network** and a **Bi-spectrum camera**, to detect heat source, intensity of radiation, obstacle's situation, and assist rescuers to search for stranded victims; the other one was installed a **gas sensor** to detect harmful gases and provide data to the digital operating system. The Jueyings have successfully completed the mission with outstanding performance.

