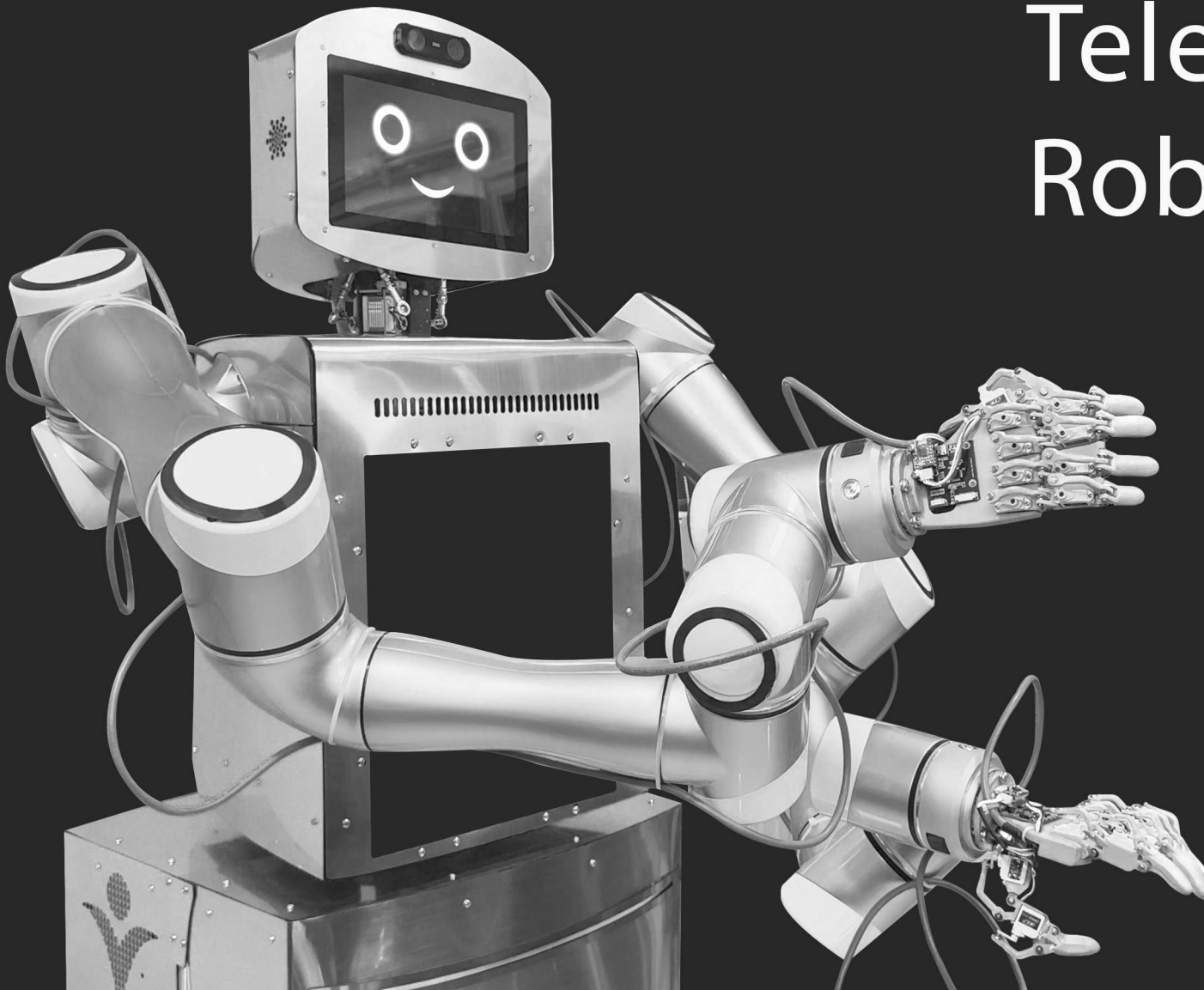




# Painverse

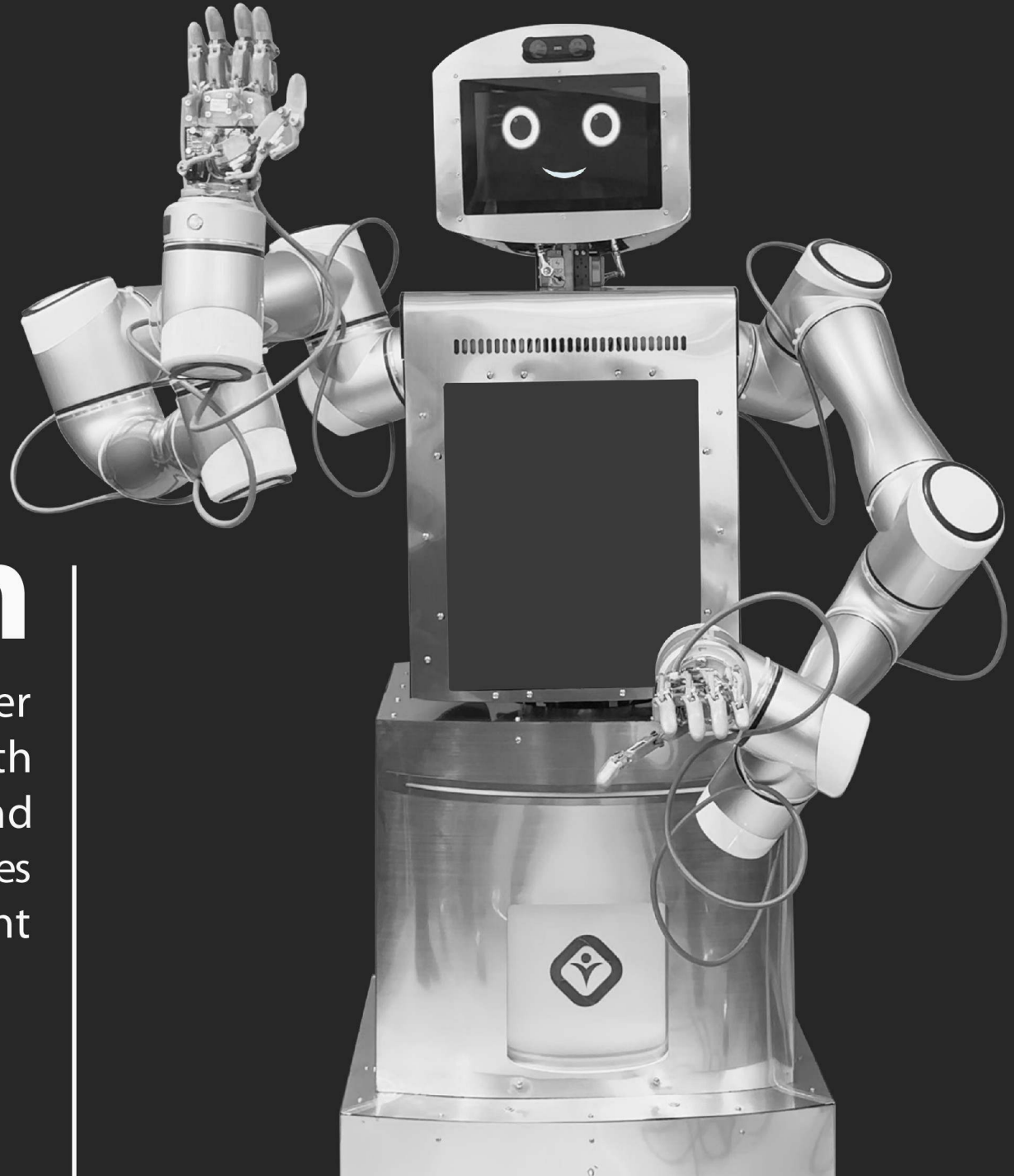
## Telemedicine

## Robotics



# Mission

"Our mission is to empower physicians worldwide with AI-driven telerobotics and advanced medical technologies for precise remote patient examinations."



A humanoid robot with a screen face displaying a smile, mounted on a control console with various buttons and a small display. The robot is positioned in the background, slightly to the right of the center.

# Introduction

Painverse is revolutionizing telemedicine system by combining AI, robotics, and extended reality (XR) to enable real-time remote medical examinations across the globe. This system allows doctors to assess and diagnose patients from different geographical locations in real-time. Painverse operates through direct interaction between the physician, two robotic systems, and the patient.

The system comprises two main components:

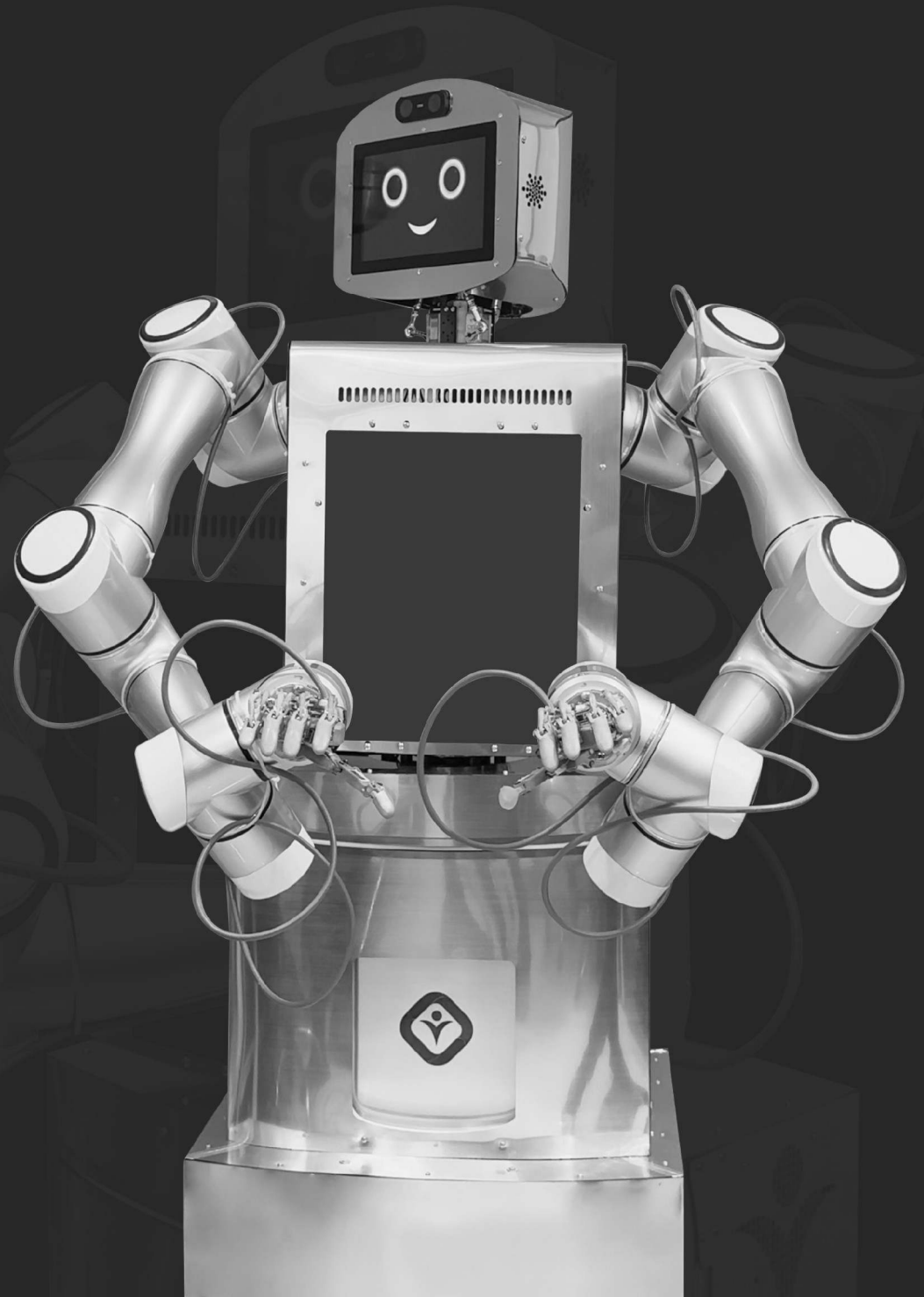
- **Vira Humanoid Robot** – A humanoid robot that conducts assessments and consultations on behalf of the doctor.
- **Hira Control System** – A control interface that enables the doctor to operate Vira remotely.

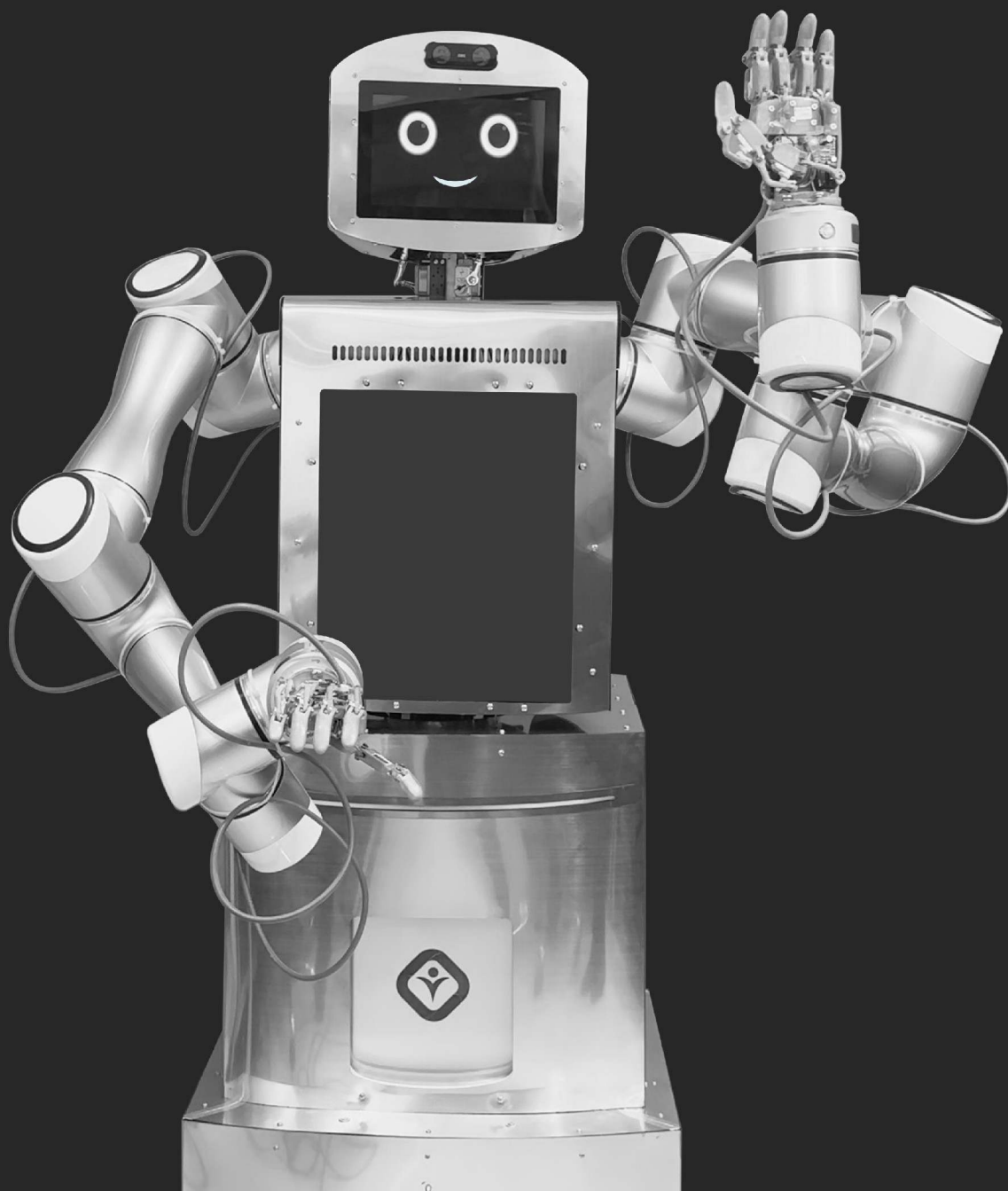
Unlike traditional telemedicine, which relies solely on video consultations, Painverse integrates telerobotics, allowing physicians to perform hands-on examinations remotely with near-human precision.

# Why Painverse?

The World Health Organization (WHO) warns of an alarming global healthcare crisis, with a deficit of 4.3 million medical professionals. This shortage is most severe in rural communities, conflict zones, and disaster-stricken areas, where access to specialized care is scarce. This challenge is particularly critical in rural areas, conflict zones, and underserved communities, where access to specialized care is limited.

The COVID-19 pandemic accelerated the adoption of telemedicine, proving that remote healthcare solutions can be both effective and life-saving. While telemedicine has proven its value, it often lacks physical examination capabilities, leading to diagnostic limitations. Painverse overcomes this gap by integrating advanced telerobotics and haptic technology, enabling precise remote examinations.





# Real-World Applications of Telerobotics in Healthcare

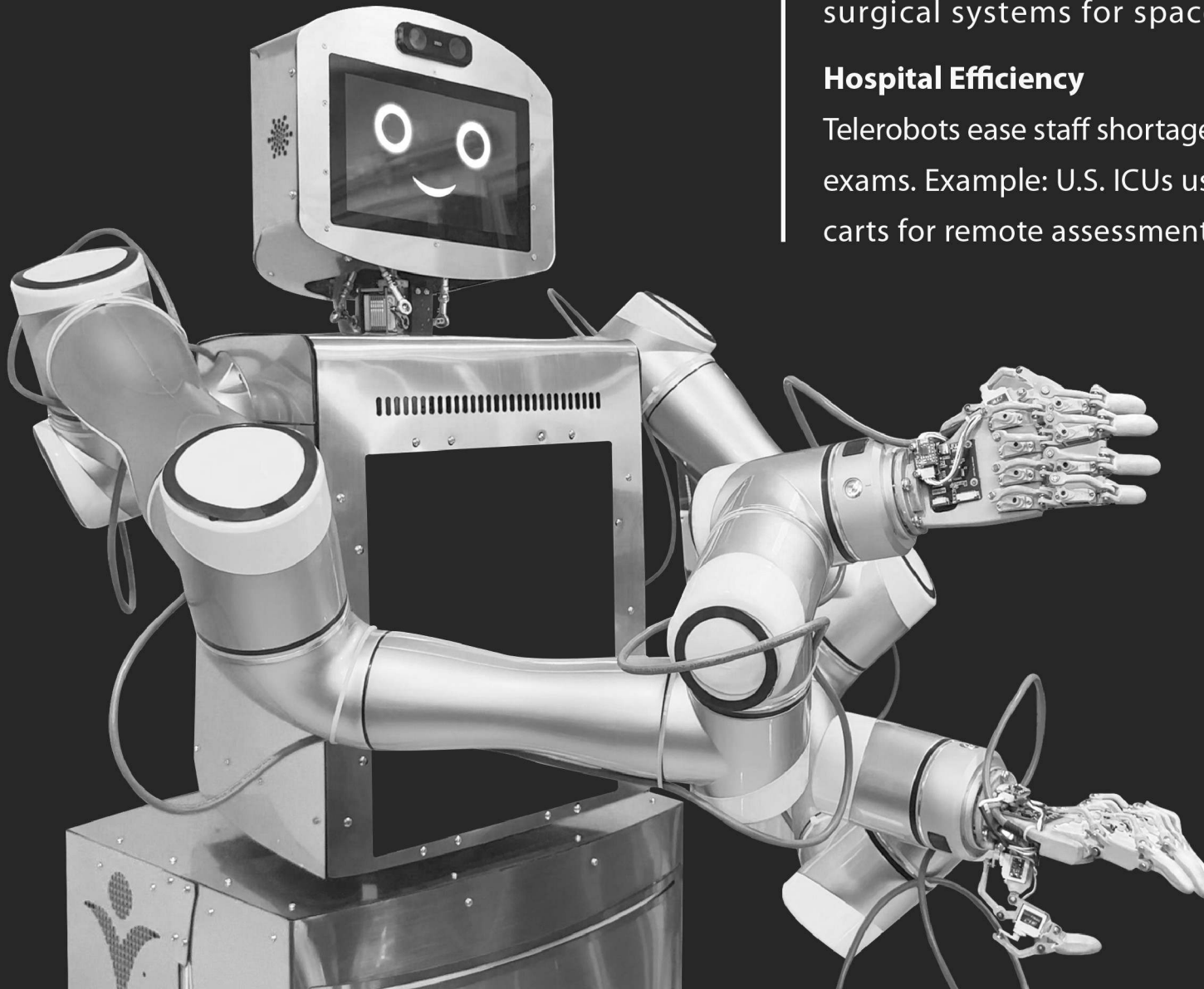
## Emergency Response

Physicians can remotely operate robots like Painverse's Vira to treat patients in disasters, biohazards, or conflict zones. Example: COVID-19 telemedicine robots in Italy and China.

## Remote & Rural Care

Telerobotics connects patients in isolated areas with specialists, reducing travel needs. Example: Canada's Arctic telemedicine programs.



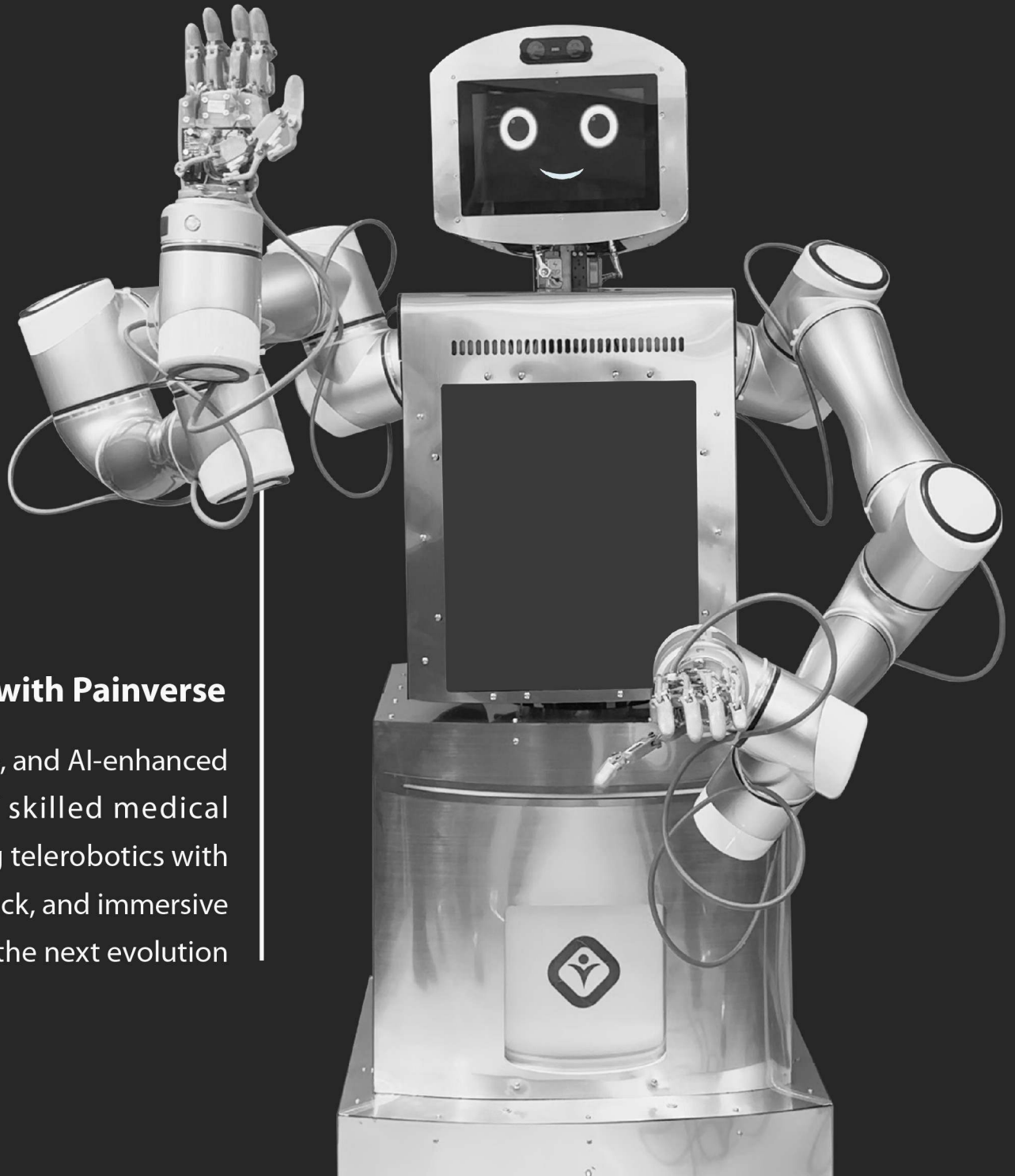


### **Space & Extreme Environments**

Painverse's tech could support astronauts with real-time medical care. Example: NASA's telerobotic surgical systems for space missions.

### **Hospital Efficiency**

Telerobots ease staff shortages by handling preliminary exams. Example: U.S. ICUs using robotic telemedicine carts for remote assessments.



## **The Future of Remote Medicine with Painverse**

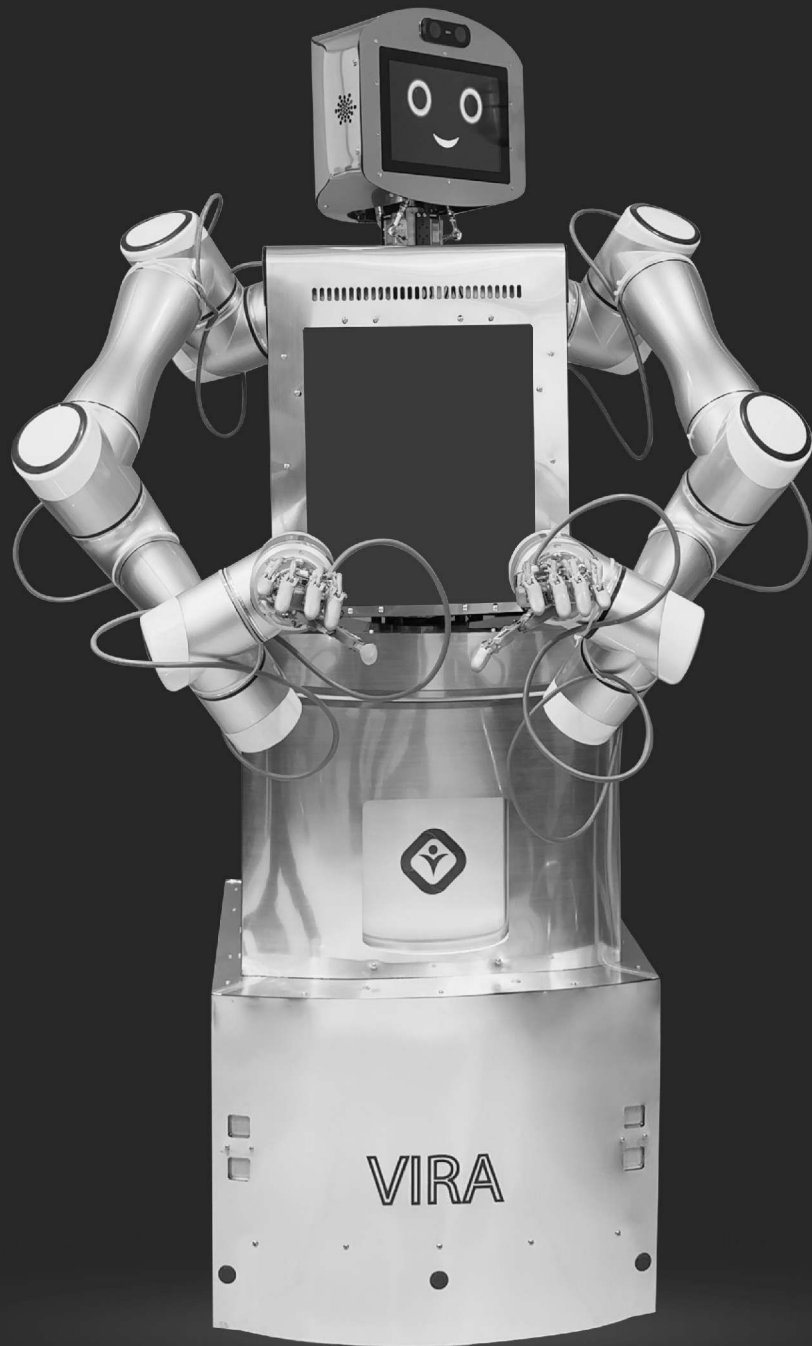
Painverse offers a scalable, cost-effective, and AI-enhanced solution that extends the reach of skilled medical professionals worldwide. By integrating telerobotics with real-time communication, haptic feedback, and immersive XR, Painverse is not just a solution—it's the next evolution of healthcare.



# Features

- **Vira Humanoid Robot** – Functions as the doctor's presence at the medical site, accurately replicating the physician's movements.
- **Haptic and XR Integration** – Detects the doctor's arm and finger movements using haptic gloves and an extended reality (XR) headset for precise remote control.
- **AI-Powered Motion Execution** – Utilizes the NVIDIA Jetson Orin developer kit to ensure Vira replicates the doctor's motions with high accuracy.
- **Real-Time Communication** – Enables seamless doctor-patient interaction through speech-to-text, translation, and text-to-speech technologies.
- **Immersive XR Visualization** – Uses Unreal Engine-powered XR technology to provide the doctor with a real-time visual representation of the patient's environment.





# Specifications

## 1. Vira Humanoid Robot

- **6-DoF Arms**

- Precise replication of natural human arm movements
- Supports up to 10 kg payload at the end effector

- **Dexterous Five-Finger Robotic Hands**

- Engineered for secure and versatile object manipulation
- 11 DoF per hand powered by nano servo motors

- **Interactive Face**

- Enables seamless and engaging communication
- Features a collaborative touch-sensitive face with a range of facial expressions

- **Flexible 3-DoF Neck**

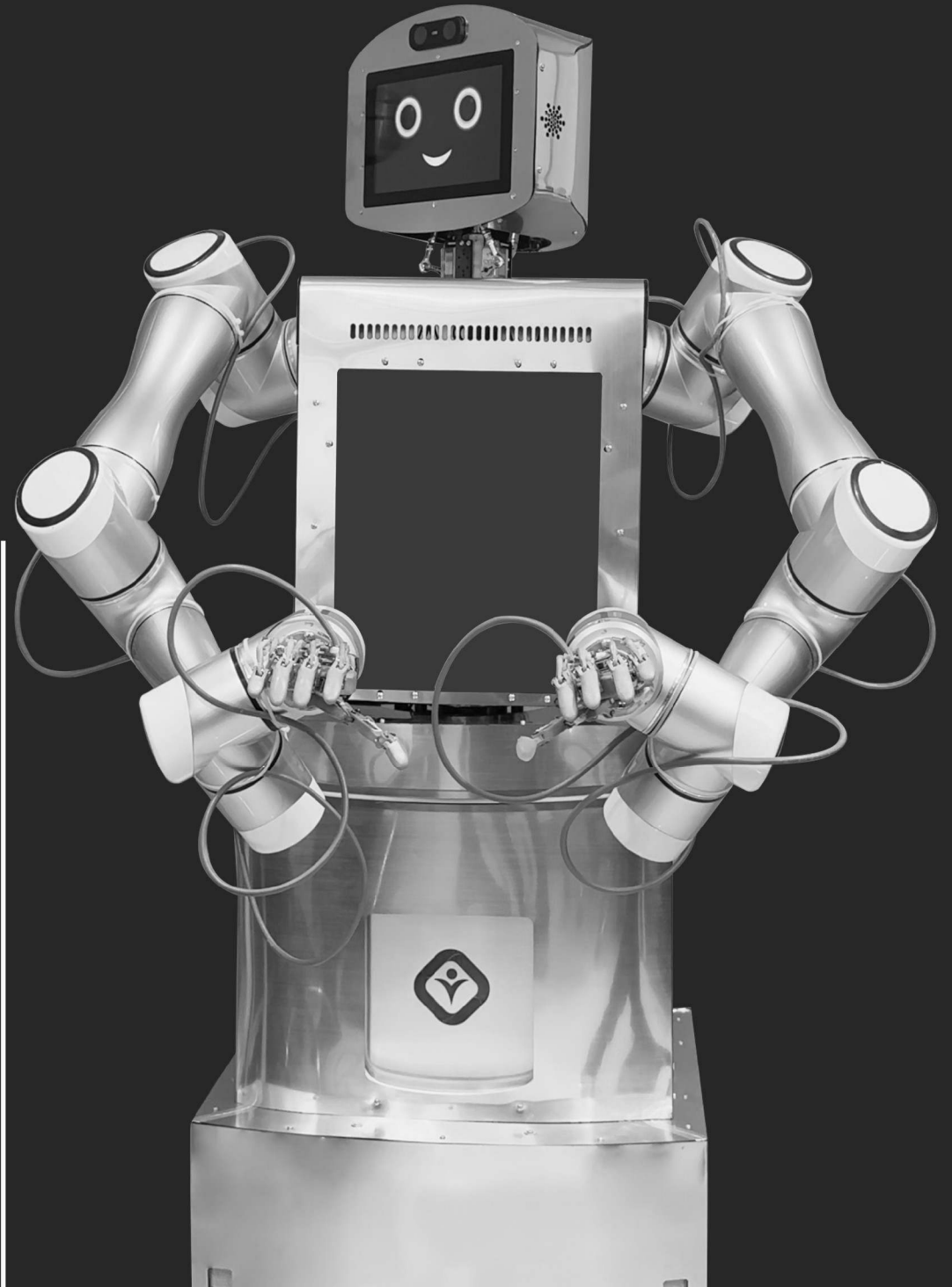
- Provides human-like observation and focus on surroundings
- Implements a novel 3-RSS parallel robot with actuation redundancy

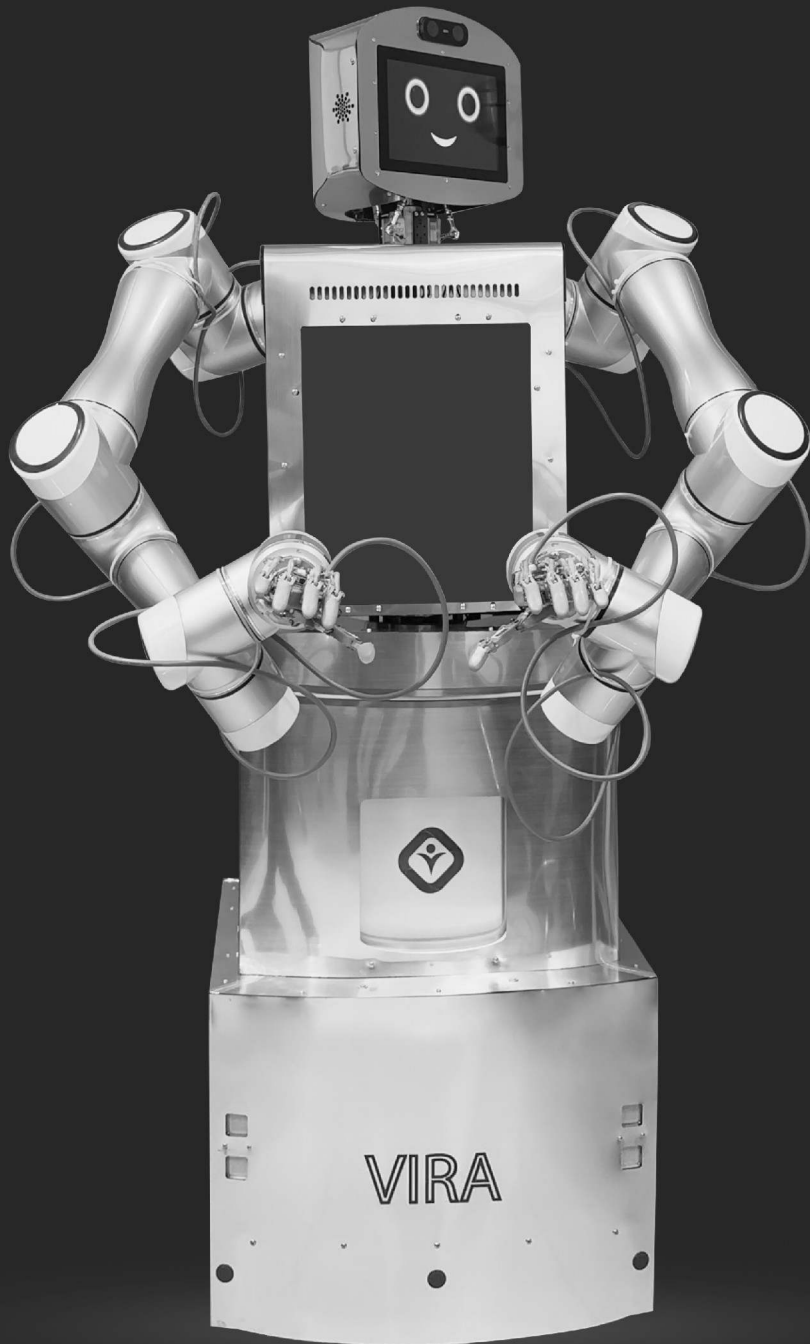
- **NVIDIA Jetson Orin Developer Kit**

- Delivers up to 275 TOPS (trillion operations per second) of AI performance
- Equipped with a 2048-core NVIDIA Ampere architecture GPU featuring 64 Tensor Cores

- **Zed X Mini Depth Camera**

- High-precision depth sensing with a 120° field of view
- Built with a robust design for industrial applications





- **Battery Pack**

- Utilizes Lithium-Phosphate technology with CCVD charging
- Supports up to 4 hours of continuous operation on battery

- **Interactive Monitor for Telecommunication**

- Provides real-time video communication between doctor and patient
- 17-inch high-quality capacitive touchscreen

- **Quad-Wheel Mobility**

- Enables smooth planar navigation on floors
- Features in-wheel drive technology for enhanced portability

- **Rotating Trunk for Extra Dexterity**

- Allows 180° rotation around the vertical axis for improved reach and adaptability
- Allows efficient maneuvering in confined spaces without repositioning the entire robot

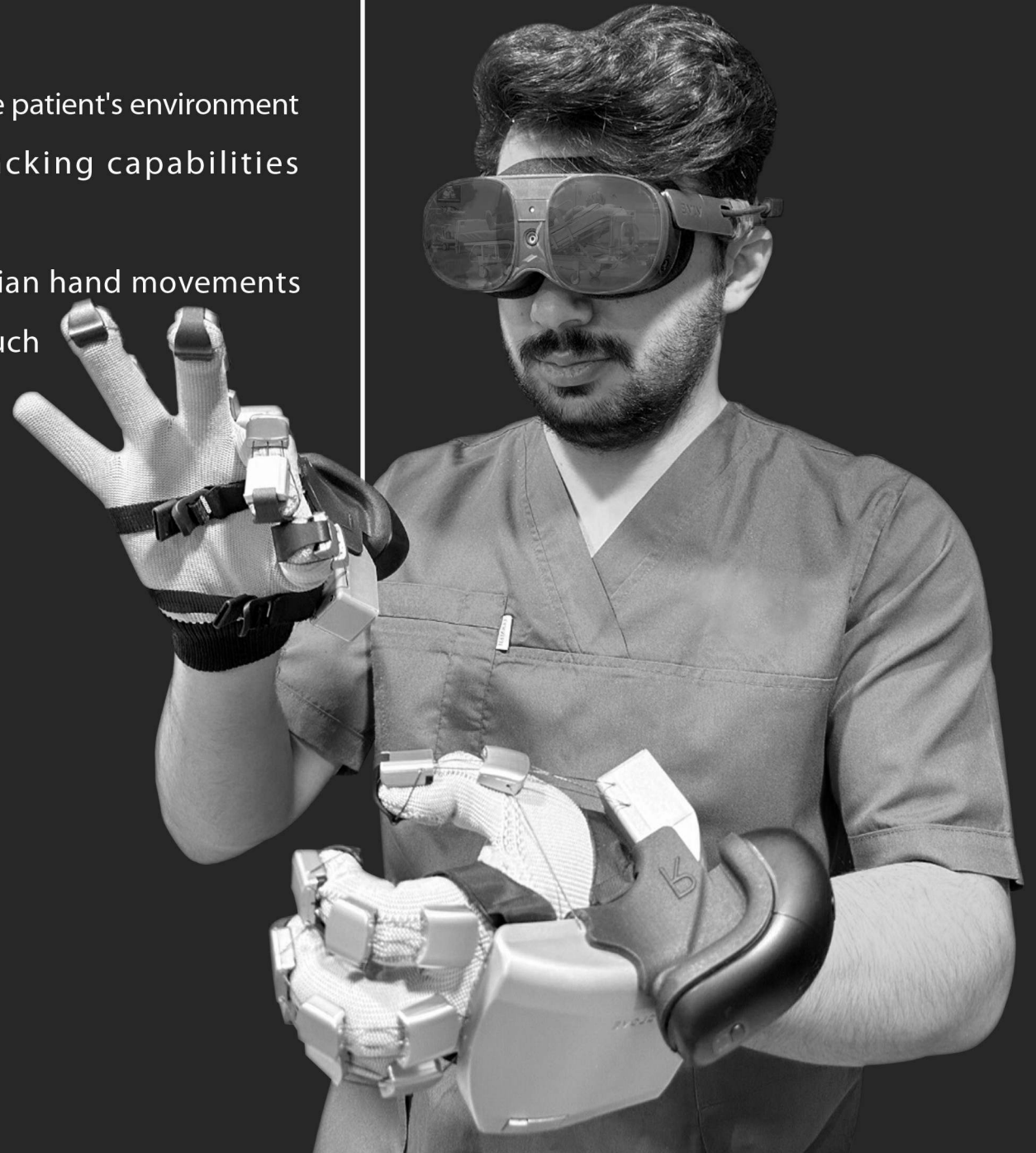
## 2. Hira Control System

- **VIVE XR Elite Headset**

- Provides an immersive real-time view of the patient's environment
- Equipped with comprehensive tracking capabilities

- **Nova Haptic Gloves**

- Detects and accurately maps all physician hand movements
- Delivers haptic feedback to simulate touch and force sensations



A grayscale image of a robotic arm with a screen on its head showing a simple smiley face. The arm is positioned on the left side of the frame, reaching towards the center. The background is dark and textured.

# Join the future of remote healthcare with Painverse Contact us today to learn more

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