**Quadruped Robots**

# Academia & Education
# Solution

**Empowering Academic Excellence Through Advanced Robotics**
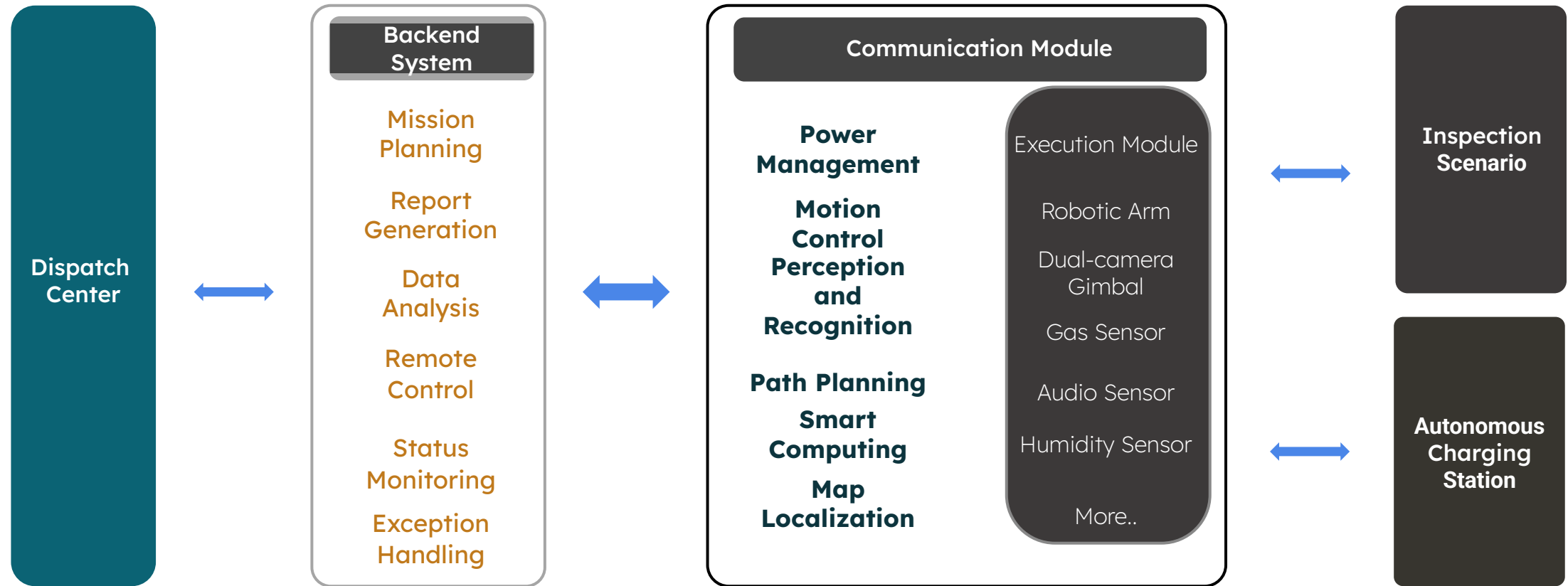
V. 1.01
April 2025

INMOTION ROBOTIC
www.inmotionrobotic.com

DEEPRobotics ✕BOW

# Function Structure



**Dispatch Center**

**Backend System**
- Mission Planning
- Report Generation
- Data Analysis
- Remote Control
- Status Monitoring
- Exception Handling

**Communication Module**

**Power Management**

**Motion Control Perception and Recognition**

**Path Planning**
**Smart Computing**
**Map Localization**

Execution Module
- Robotic Arm
- Dual-camera Gimbal
- Gas Sensor
- Audio Sensor
- Humidity Sensor
- More..

**Inspection Scenario**

**Autonomous Charging Station**

# Application Scenarios



## Research Labs

Perfect for robotics research exploring motion dynamics, AI integration, and environmental sensing.

## STEM Education

Provides hands-on learning in programming, robotics engineering, and AI applications.

## Robotics Competitions

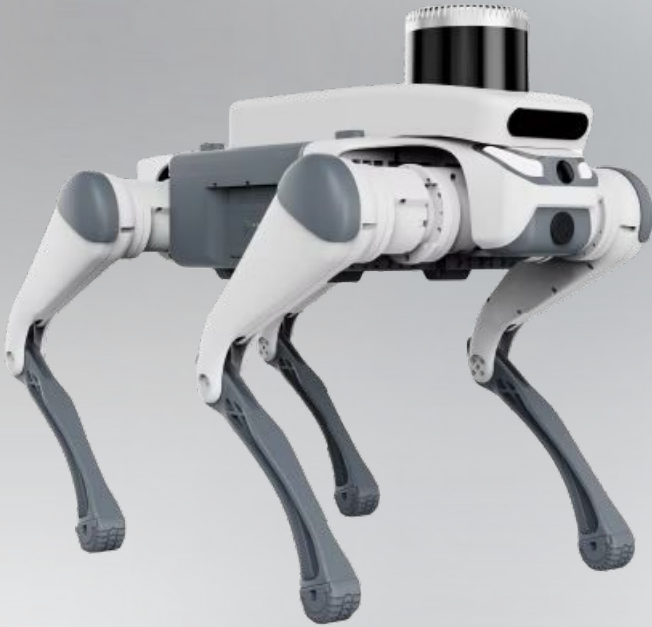Ideal platform for student competitions in robot design, programming, and problem-solving.

## Innovation Centers

Supports technology demonstrations and cross-disciplinary innovation projects.

# SID1 – Lite3 Series

### Venture

Entry-level model perfect for basic robotics education and motion training applications.

### Pro

Advanced model with enhanced computing capabilities for deeper AI and machine learning projects.

### LiDAR - LiDAR 2

Specialized version with integrated LiDAR for environmental mapping and autonomous navigation research.

**All-terrain Adaptation**

**Powerful Expansion**

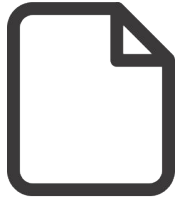**Autonomous Navigation**

**Environment Reconstruction**

# Technical Parameters

| Models | Venture | Pro | LIDAR |
|---|---|---|---|
| Package | – | ROS + 1 year License BOW | |
| Standing Size | 610 × 370 × 445 mm | 610 × 370 × 445 mm | 610 × 370 × 503 mm |
| Load Capacity | 7 kg | 7 kg | 7 kg |
| Weight | 12.2 kg | 12.2 kg | 12.2 kg |
| Max Slope | 40° | 40° | 40° |
| Stair Height | 15cm | 15cm | 15cm |

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# Development Support

### Development Manual

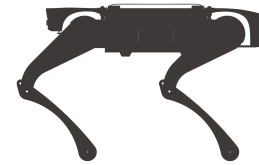*Comprehensive user manuals*

- Product usage guides
- Software interface documentation
- Motion & perception development guides

### Secondary Development

*Complete SDK package*

- Motion SDK & API
- Perception software interfaces
- Recognition, tracking & navigation source code
- Built-in ROS system for efficient development

### Simulation Capabilities

*Advanced simulation support*

- URDF simulation models
- Motion development demos
- Kinematic & dynamic simulations
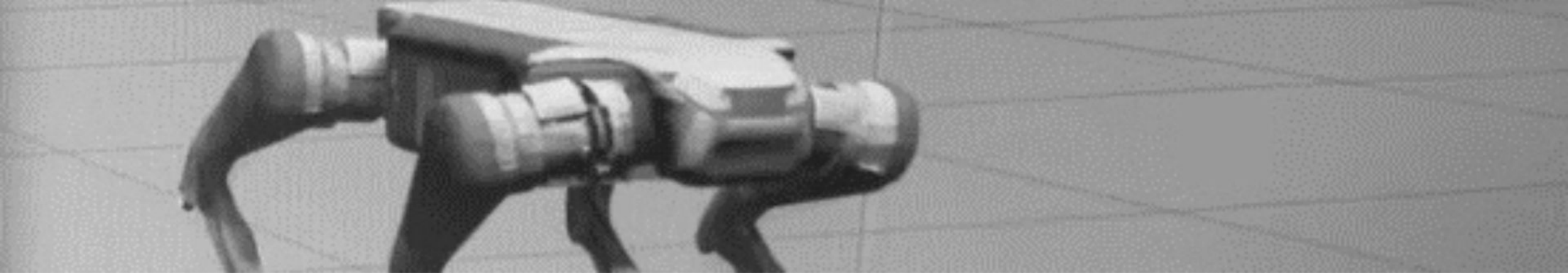- Compatible with major simulation platforms
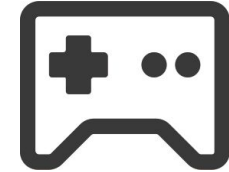
### Control Platform

*Android Control App Features*

- Real-time video streaming with minimal latency
- Intuitive motion control interface
- One-click access to:
  - Voice control
  - Obstacle detection
  - Advanced functions

# Human-Machine Interaction

| 1 | 2 | 3 | 4 |
|---|---|---|---|

**Advanced Gaits**

- Jumping and flipping
- Dancing capabilities
- Self-recovery after falls
- Crawling functionality

**Feedback Systems**

- Built-in speaker system
- LED light strip integration
- Synchronized music and lighting effects

**Customization**

- Hands-on component assembly
- Programming experience
- Customization opportunities

**Industry Integration**

- Adaptable for various industries
- Supports laboratory work
- Enables curriculum development

# BOW: Making Robotics Accessible

**Multiple Programming Languages**

Program robots using C#, Python, or C++

**Cross-Platform Development**

Build applications on Windows or Linux systems

**Simulation to Reality**

Seamless transition between virtual and physical robots

**Universal Codebase**

One SDK works across all InMotion robot models

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# BOW:
# Real-time Robot Control & Visualization

## Key Features

- Real-time control and visualization
- User-friendly SDK with comprehensive tools
- Hardware-agnostic development

## Developer Support

- Dedicated expert assistance
- Cross-platform compatibility
- Automatic BOW-enabled robot compatibility



## Technical Capabilities

- Universal SDK command conversion
- Local network and Internet control
- Minimal latency operation
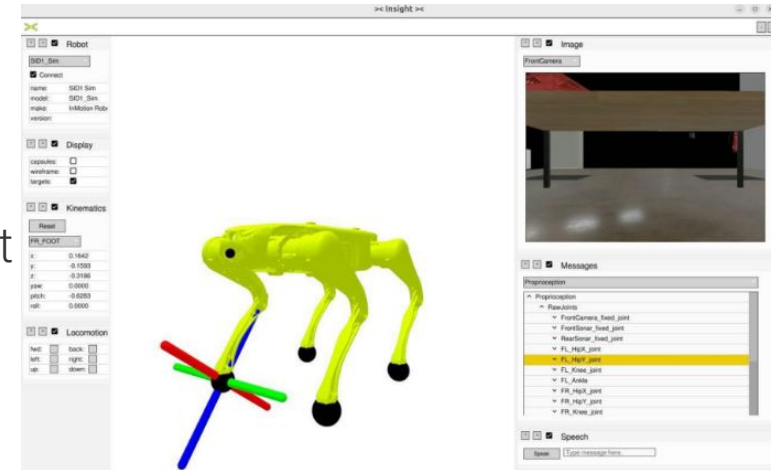
# Expandable Modules



## LiDAR Module

16-line:
- Detection Range: 100 m @10% 150 m @70%
- 3D-SLAM algorithm development for map creation, navigation, and obstacle avoidance.
- Multi-sensor fusion algorithms involving depth cameras, inertial navigation systems, and LiDAR, enabling more precise navigation, positioning, path planning, and obstacle avoidance.

## Depth Camera

Monocular color images, stereo grayscale images, depth point clouds, and internal IMU data output. Can be used for:
- Visual SLAM and terrain mapping development.
- Color image resolution: 1920x1080 @30FPS.
- Grayscale image resolution: 1280x720 @30FPS.
- Depth point cloud resolution: 1280x720 @30FPS.
- 2.5D terrain mapping and visual algorithm development.

## AI Server

21 TOPS:
- GPU: Equipped with 384-core NVIDIA Volta™
- GPU with 48 Tensor Cores.
- CPU: 6-core NVIDIA Carmel ARM®v8.2 64-bit
- CPU with 6MB L2 + 4MB L3 cache.
- Memory: 16GB, 128-bit LPDDR4x with a bandwidth of 59.7GB/s.
- Storage: 16GB eMMC 5.1.

# New Offer

## All New SID1/Lite3 Pro LiDAR 2 with Mid 360 LiDAR Camera

- **Advanced Control System:** State-of-the-art motion control and balance algorithms
- **Modular Design:** Easily expandable with additional sensors and components
- **Research-Grade Hardware:** Professional-quality actuators and sensors
- **Educational Integration:** Comprehensive curriculum support materials

## Key Specifications

- Laser: 905 nm wavelength, Class 1 eye-safe (IEC 60825-1:2014)
- Detection Range: 40m @ 10% reflectivity, 70m @ 80% reflectivity
- Field of View: 360° horizontal, -7° to 52° vertical
- Precision: ≤2cm @ 10m, Angular error ≤0.15°

## Performance

- Point Rate: 200,000 points/s
- Frame Rate: 10 Hz typical
- Data: 100 BASE-TX Ethernet with GPS sync

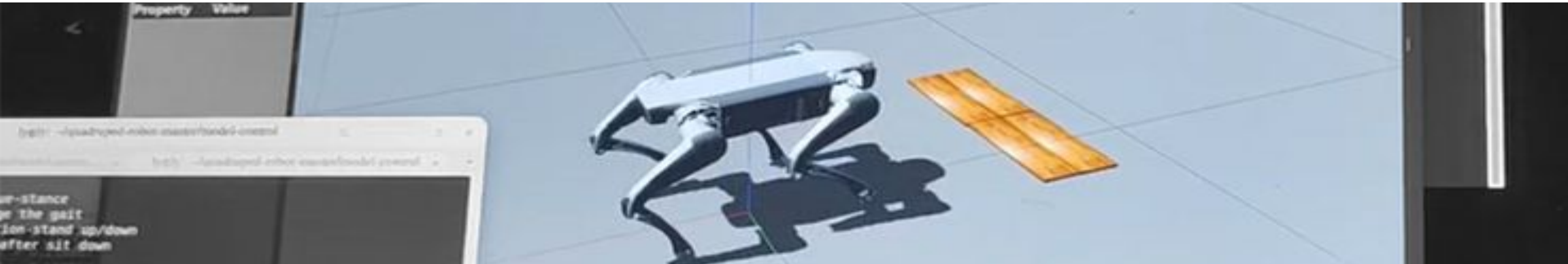## Environmental

- Operating Temp: -20° to 55°C
- Protection: IP67-rated

## Special Educational Bundle Price: 11.990€

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# System Architecture



**Sensor Systems**
Ultrasonic radar, LiDAR, and cameras provide comprehensive environmental data.

**Processing Units**
Dedicated perception units and motion controllers handle specialized tasks.

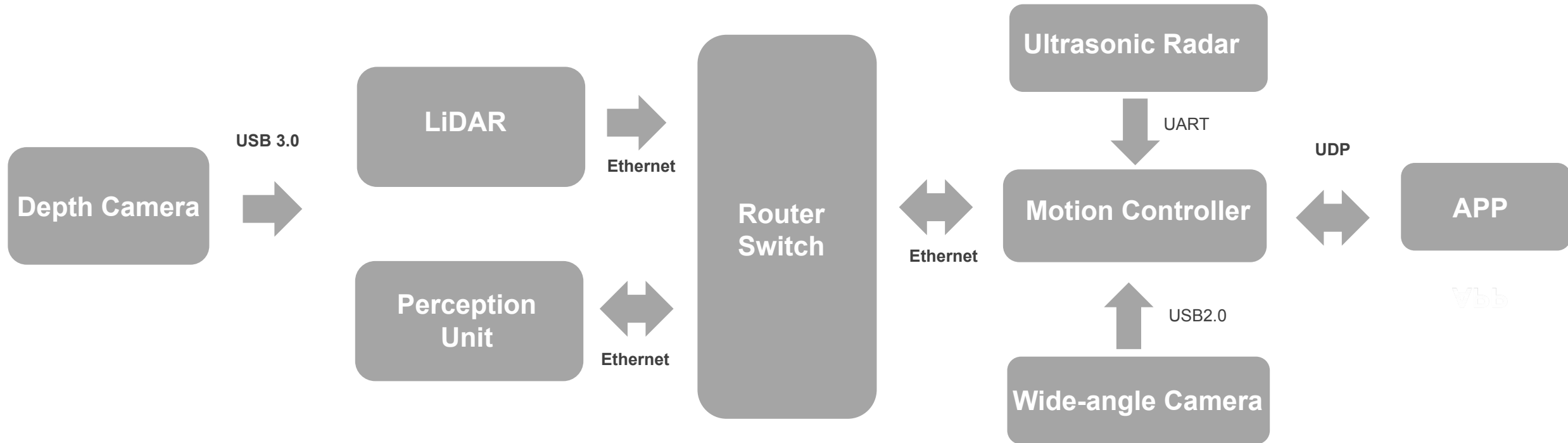**1**   **2**   **3**   **4**

**Communication Network**
Ethernet, USB, and UART protocols ensure reliable data transmission.
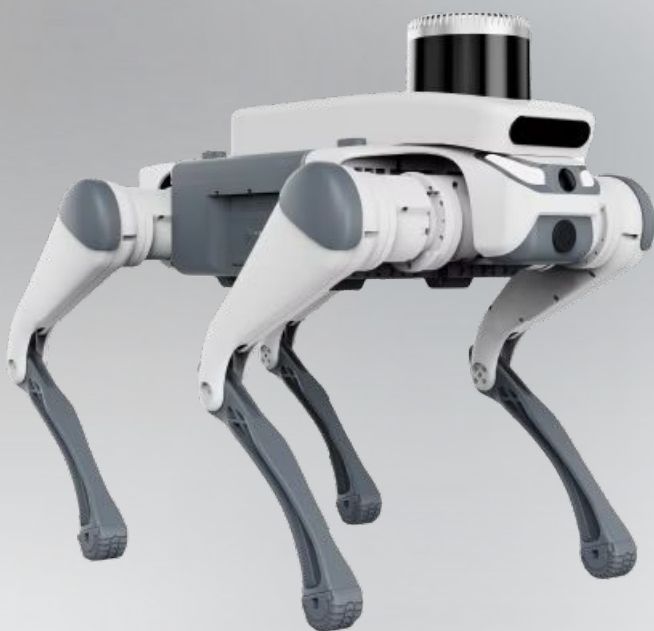
**Control Interface**
Intuitive app provides real-time control and monitoring capabilities.

# Function Structure

# Transform Your Robotic Education

## 4
### Models
Different configurations to meet diverse educational needs.

## 21
### TOPS
Powerful AI computing capabilities for advanced research.

## 16
### Sensors
Comprehensive perception system for environmental awareness.

## 100%
### Support
Complete documentation and development resources.

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# The Future of Learning is Robotic

**SID1 Basic**
**SID1 Pro**
**SID1 Venture AI**

- Enhance research efforts
- Leverage knowledge and skills
- Commit to continuous learning

**Schedule a Demo**

*Visit*

*www.inmotionrobotic.com/education*

## Education Bundle

**Starting:    6,490 €**
**+ VAT**

## Academic Discounts

Special pricing for educational institutions and bulk orders

## Get in Touch

info@inmotionrobotic.com

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# Thank you for You Attention



**email: info@inmotionrobotic.com**