



52072K AI IOT Robotic Kit; all-in-one solution for building AI , IOT and robotic systems. Tailored for researchers, students, and developers, it includes the powerful Raspberry Pi Model B 4 (4GB) at its core, integrated with a suite of supporting accessories and hardware for robotics and automation applications.

Key Features

1. Raspberry Pi Model B 4 (4GB RAM):
 - Quad-core ARM Cortex-A72 CPU
 - Supports 4K video output
 - Dual-band Wi-Fi and Bluetooth 5.0
 - USB 3.0 for faster data transfer
2. Motor and Servo Control:
 - 16-channel PWM servo driver for precise motor control
 - DC motor driver module supporting up to 4 motors
 - Servo motor (3 included) for robotic arm movement
3. Sensors for Robotics and IoT Applications:
 - Ultrasonic distance sensor
 - IR sensor for line following
 - MPU6050 Gyroscope and Accelerometer for motion tracking
 - Optical encoder for speed and position monitoring
4. AI and Vision Integration:
 - Raspberry Pi Camera Module (8MP or higher)
 - Compatible with TensorFlow Lite for on-device machine learning
 - Preloaded software for face, object, and gesture recognition
5. Connectivity and Expansion:
 - GPIO pin access for custom sensor and module interfacing
 - HDMI output for display connectivity

Note: Specifications are subject to change.

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- Preloaded OS with software development tools (Python, Scratch, etc.)
6. Power System:
 - 7.4V rechargeable lithium-ion battery with 5V step-down regulator for powering the Raspberry Pi and motors
 - USB-C power adapter for Raspberry Pi
 7. Chassis and Build:
 - High-quality aluminum robotic car chassis
 - Four-wheel drive with adjustable mounting slots for sensors and servos
 - Compact and modular design
 8. Cloud Integration:
 - Compatible with popular IoT platforms like ThingSpeak, AWS IoT, and Azure IoT
 - Preconfigured to send data via HTTP, MQTT, or WebSocket
 9. Development and Learning Resources:
 - Detailed documentation and tutorials for beginners and advanced users
 - Preloaded with robot control software and test codes

Kit Contents

1. Core Components:
 - Raspberry Pi Model B 4 (4GB RAM)
 - Raspberry Pi OS preloaded on a 32GB micro SD card
 - Camera Module (8MP or higher)
2. Actuation Components:
 - 4x DC motors with encoders
 - 3x Servo motors
 - Motor driver module (L298N or equivalent)
 - 16-channel PWM Servo Driver
3. Sensors:
 - 1x Ultrasonic Sensor (HC-SR04)
 - 1x IR Sensor
 - 1x MPU6050 Module
4. Power Supply:
 - 7.4V 2500mAh rechargeable battery
 - USB-C power adapter
5. Accessories:
 - Aluminum robotic car chassis with wheels
 - Mounting hardware and screws
 - Jumper wires and GPIO expansion board

Robotic Applications

- Autonomous robotic vehicles
- Gesture-controlled robots
- AI-powered vision systems
- IoT-based home automation
- Industrial automation projects
- Target tracking and following
- Autonomous navigation robot with SLAM

AI IoT Applications:

- Implementing facial recognition
- Smart Healthcare Monitoring
- Edge AI application
- Implementing Emotion Detection
- Implementing text analysis applications
- collect data from IoT devices and process the data with AI models for real-time analysis, predictions, or optimization of IoT systems.
- Smart traffic flow monitor or speed track analytics
- Tracking the movement of a particular person or object
- Real-time Language Translation
- Smart Vision Brightness Control
- Cursor Control via Webcam

Basic IoT Applications (ESP32):

- Home Automation
- Bluetooth enabled applications
- Voice/speech controlled IoT devices
- Thingspeak/Blynk Cloud-based applications
- M2M communication using Wireless

Benefits

- Open-source Flexibility: Fully compatible with Python, Open CV, and other open-source software.
- Modularity: Easily customizable for various robotic applications.
- Performance: Combines the computational power of the Raspberry Pi 4 with precise motor and sensor integration.
- Automation: Automates decision-making processes, reducing the need for human intervention and increasing efficiency
- Real-time Processing: Supports real-time analytics, enabling quick responses and adaptive behavior in dynamic environments
- Data Collection and Analytics: Facilitates the collection of large volumes of sensor data, which can be used for analysis and predictive maintenance.

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