Boards and Microcontrollers for AIoT Projects

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1. Raspberry Pi Series

Raspberry Pi 4

- Processor: Broadcom BCM2711, Quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
- RAM: 2GB, 4GB, or 8GB options
- Connectivity: 2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, Gigabit Ethernet
- Ideal for: Edge computing, computer vision projects, advanced AI applications

Raspberry Pi Zero W

- Processor: 1GHz, single-core CPU
- RAM: 512MB
- Connectivity: 802.11 b/g/n wireless LAN, Bluetooth 4.1
- Ideal for: Compact IoT projects with basic AI capabilities

2. NVIDIA Jetson Series

NVIDIA Jetson Nano

- Processor: Quad-core ARM A57 @ 1.43 GHz
- GPU: 128-core NVIDIA Maxwell architecture
- RAM: 4GB 64-bit LPDDR4
- Ideal for: AI-powered robotics, intelligent video analytics

NVIDIA Jetson Xavier NX

- Processor: 6-core NVIDIA Carmel ARM v8.2 64-bit CPU
- GPU: 384-core NVIDIA Volta architecture
- RAM: 8GB 128-bit LPDDR4x
- Ideal for: High-performance AI applications, autonomous machines

3. Arduino Boards

Arduino Nano 33 BLE Sense

- Processor: 64MHz Arm Cortex-M4F
- Connectivity: Bluetooth 5.0
- Built-in sensors: 9-axis IMU, microphone, gesture, proximity, light color and light intensity
- Ideal for: IoT projects with basic machine learning capabilities

Arduino Portenta H7

- Processor: Dual-core Arm Cortex-M7 and Cortex-M4
- Connectivity: WiFi, Bluetooth 5.1, Ethernet
- Ideal for: Industrial IoT applications, real-time AI processing

4. ESP32-based Boards

ESP32-CAM

- Processor: Dual-core Xtensa 32-bit LX6 microprocessor
- Connectivity: WiFi, Bluetooth
- Features: Integrated camera
- Ideal for: AIoT projects involving computer vision

ESP32-S3

- Processor: Dual-core Xtensa LX7 microprocessor
- Connectivity: WiFi, Bluetooth 5 (LE)
- Features: AI acceleration instructions
- Ideal for: Edge AI applications, voice recognition

5. Google Coral Dev Board

- Processor: NXP i.MX 8M SOC (Quad Cortex-A53, Cortex-M4F)
- AI Accelerator: Google Edge TPU coprocessor
- RAM: 1GB LPDDR4
- Ideal for: TensorFlow Lite projects, on-device machine learning

6. BeagleBone AI

- Processor: Texas Instruments AM5729 dual-core Cortex-A15 SoC
- AI Accelerators: 4 EVEs (Embedded Vision Engines), 2 C66x DSPs
- RAM: 1GB RAM
- Ideal for: Computer vision, robotics, industrial automation

7. Kendryte K210

- Processor: Dual-core 64-bit RISC-V CPU
- AI Features: Neural Network Processor (KPU)
- Ideal for: Low-power AI applications, image and audio recognition

This list provides a range of options suitable for various AIoT project requirements, from basic sensor data processing to advanced computer vision and machine learning applications. When choosing a board or microcontroller, consider factors such as processing power, power consumption, connectivity options, and compatibility with your preferred AI frameworks.