

Tiny ML Kit Edgeimpulse

1. Tiny ML Shield



The TinyML Shield is a hardware add-on designed to enable machine learning (ML) applications on microcontroller-based platforms, particularly for edge computing tasks. It is commonly used with development boards like Arduino or Raspberry Pi for deploying low-power, resource-efficient ML models. The shield integrates various sensors such as accelerometers, microphones, and environmental sensors, allowing for data collection and real-time inference using tiny machine learning models.

TinyML Shields are ideal for applications in IoT, smart devices, gesture recognition, voice commands, and predictive maintenance, offering compact, low-latency, and energy-efficient ML solutions.

2. OP7675 Camera Module



The OV7675 Camera Module is a compact, low-power CMOS image sensor designed for capturing digital images and videos. It features a resolution of 640x480 pixels (VGA) and supports frame rates up to 30 frames per second. The OV7675 is commonly used in embedded systems, mobile devices, and IoT applications where space and power constraints are crucial.

The module integrates advanced image processing functions, including automatic exposure control, white balance, and color correction. Its small size and energy efficiency make it ideal for applications like security cameras, drones, robotics, and facial recognition systems.

3. BLE 33 Nano Sense Lite



The BLE 33 Nano Sense Lite is a compact, low-power development board from Arduino, featuring Bluetooth Low Energy (BLE) and a range of onboard sensors. It is based on the Nordic nRF52840 SoC, which includes a 32-bit ARM Cortex-M4 processor. The board is designed for IoT and AI applications at the edge, supporting machine learning through TinyML.

The Nano Sense Lite version is equipped with essential sensors like a 6-axis IMU, but lacks the microphone and environmental sensors found in the full Nano 33 BLE Sense version. This makes it ideal for applications such as gesture detection, wearable devices, and BLE-based communication while maintaining a small form factor and power efficiency.