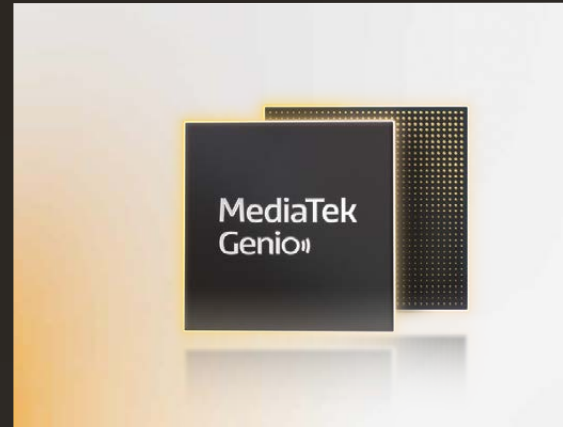


Committed to excellence



MediaTek Genio

Genius at the Edge

V3.1

MEDIATEK

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Edge Intelligence. Global Connectivity. Built for Scale.

MediaTek Genio SoC combined with an **open standards software platform** helps you design and create intelligent connected devices

Premium


Mainstream



Value





Our Product Portfolio

 Semiconductors

 Boards & Systems

 Passive Components

 Storage Technologies

 Electromechanical Components

 Wireless Technologies

 Displays & Monitors

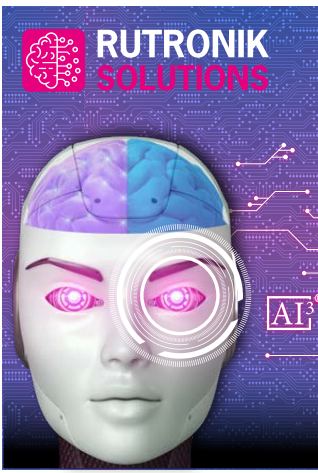
Our Initiatives

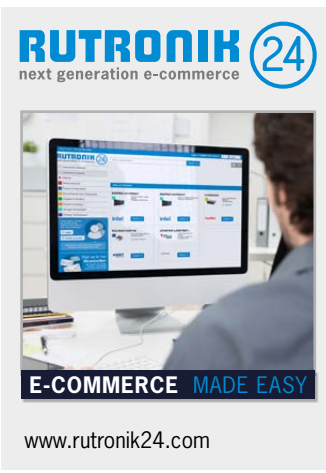
 RUTRONIK AUTOMOTIVE

 RUTRONIK EMBEDDED

 RUTRONIK POWER

 RUTRONIK SMART





Committed to excellence

Consult – Know-how. Built-in.
The Technical Competence from RUTRONIK
Worldwide and individual consulting on the spot by competent sales staff, application engineers & product specialists.

Components – Variety. Built-in.
The Product Portfolio from RUTRONIK
Wide product range of semiconductors, passive and electromechanical components, displays & monitors, boards & systems, storage and wireless technologies for optimum coverage of your needs.

Logistics – Reliability. Built-in.
The Delivery Service from RUTRONIK
Innovative and flexible solutions: from supply chain management to individual logistics systems.

Quality – Security. Built-in.
Quality without Compromise from RUTRONIK
The integrated management system (IMS) encompasses quality control, information security, environmental protection, occupational health and safety.



Edge Intelligence. Global Connectivity. Built for Scale.

MediaTek Genio SoC combined with an **open standards software platform** helps you design and create intelligent connected devices

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Value





MediaTek Genio

MediaTek's Genio family of System-on-Chips (SoCs) empowers a diverse range of next-generation IoT devices. From smart home appliances and industrial automation to connected healthcare, Genio SoCs offer a compelling combination of features:

Multicore CPUs	High-performance Arm® Cortex®-A processors deliver the performance needed for demanding tasks
Integrated GPUs	Seamless rendering of graphics enhances user experience and supports advanced functionalities without compromising performance
Dedicated AI Processing Units (APUs)	Efficiently handles complex AI workloads, enabling features like facial recognition and voice commands
Robust Connectivity	Reliable 5G/Wi-Fi 6/Wi-Fi 6E/Bluetooth connectivity ensures devices stay online and responsive
Long-Lasting Battery Life	Genio SoCs dynamically switch between high-performance cores for demanding tasks and energy-efficient cores for background activities, reducing power consumption
10-Year Longevity Support	MediaTek offers a comprehensive 10-year longevity program for Genio SoCs. This commitment guarantees sustained availability and ongoing assistance for applications demanding extended lifecycles, particularly in industrial and healthcare settings.

Incredible Performance, Advanced Multimedia and AI empowered SoC's

	 Genio 1200	 Genio 720*/520*	 Genio 700**/510**	 Genio 420*	 Genio 360	 Genio 350
Process	6nm	6nm	6nm	6nm	6nm	14nm
CPU	4x Arm® Cortex®-A78, 2.2GHz + 4x Arm® Cortex®-A55, 2.0GHz	2x Arm® Cortex® A78, 2.4~2.6GHz + 6x Arm® Cortex® A55, 2.0GHz	2x Arm® Cortex®-A78, 2.2GHz + 6x Arm® Cortex®-A55, 2.0GHz	2x Arm® Cortex®-A78, 1.8GHz + 6x Arm® Cortex®-A55, 1.6GHz	1x Arm® Cortex® A76, 1.9~2.0GHz + 5x Arm® Cortex® A55, 1.7~2.0GHz	4x Arm® Cortex®-A53, 2.0GHz
GPU	Arm Mali-G57 MC5	Arm Mali-G57 MC2	Arm Mali-G57 MC3	Arm Mali-G57 MC2	Arm Mali-G57 MC2	Arm Mali-G52
NPU	2x MDLA2.0 + 2x VP6, 4.8 TOPS	MediaTek 8 th generation NPU, up to 9 TOPS, Total up to 10 TOPS	1x MDLA3.0 + 1x VP6, 4.0 TOPS	MediaTek 8 th generation NPU, up to 6.1 TOPS, Total up to 7.2 TOPS	MediaTek 8 th generation NPU, up to 5.1 TOPS, Total up to 6 TOPS	1x VP6, 0.35 TOPS
Audio DSP	Hi-Fi 4	N/A	Hi-Fi 5	N/A	N/A	Hi-Fi 4
Memory	4-ch 16-bit LP4(X)-4266, up to 16GB	2-ch 16-bit LP4X-4266 up to 8GB 2-ch 16-bit LP5(X)-6400 up to 16GB	2/4-ch 16-bit LP4(X)-3733, up to 8GB	2-ch 16-bit LP4X-4266 up to 8GB 2-ch 16-bit LP5(X)-6400 up to 16GB	2-ch 16-bit LP4X-3733 up to 8GB	DDR3L/DDR4/LP3/ LP4(X), up to 4GB
Storage	UFS2.1, eMMC5.1, SPI NOR	UFS3.1 2L, eMMC5.1, SPI NOR	eMMC 5.1, SPI NOR	UFS3.1 2L, eMMC5.1, SPI NOR	eMMC 5.1, SPI NOR	eMMC 5.1
Display	Triple Display, FHD60+ FHD60+ 4K60 MIPI-DSI + eDP + HDMI/DP	Single: up to UW5K60 Dual: up to 2.5K60+2.5K60 MIPI-DSI/LVDS/eDP/DP (Type-C)	Dual Display, FHD60+4K60 MIPI-DSI/eDP + HDMI/DP	Single: up to UW5K60 Dual: up to 2.5K60+2.5K60 MIPI-DSI/LVDS/eDP/DP (Type-C)	Single: Max. 4K60 Dual: Max. FHD60+ FHD60 MIPI-DSI/LVDS/eDP/DP	Dual Display, FHD60+ HD60 MIPI-DSI + LVDS/DPI
Video Input	3x MIPI CSI-2, 1x HDMI 2.0 16+16MP or 48MP@30fps 6x FHD30 with virtual channels	1/2x MIPI-CSI-2, 16+16MP or 32MP@30fps “or” 6x FHD30 with virtual channels	2x MIPI CSI-2, 16+16MP or 32MP@30fps 8x FHD30 with virtual channels	1x MIPI-CSI-2, 16MP@30fps “or” 6x FHD30 with virtual channels	2x MIPI CSI, 16MP@30fps “or” 6x FHD30 with virtual channels	2x MIPI CSI-2
VDEC	4K90, H.265/H.264/VP9/AV1	4K60, H.265/H.264/VP9	4K75/4K60, H.265/H.264/VP9/AV1	4K60, H.265/H.264/VP9	4K30, H.265/H.264/VP9	1080P60, H.265/H.264
VENC	4K60, H.265/H.264	4K30, H.265/H.264	4K30, H.265/H.264	4K30, H.265/H.264	FHD90, .265/H.264	1080P60, H.265/H.264/VP9
Peripheral	1x PCIe3.0, 1xPCIe2.0/USB3.1, 1x USB3.1, 2x USB2.0, 6x UART, 1x GbE MAC (TSN)	1x PCIe2.0, 1x USB3.2 Gen1 (Type C) (1 shared with DP), 3x USB2.0, 1x GbE MAC (TSN)	1x PCIe2.0, 1x USB3.2 Gen1, 2x USB2.0, 4x UART, 1x GbE MAC (TSN)	1x PCIe2.0, 1x USB3.2 Gen1 (Type C) (1 shared with DP), 3x USB2.0, 1x GbE MAC (TSN)	1x PCIe2.0, 1x USB3.2 Gen1, 2x USB2.0, 4x UART, 1x GbE MAC (TSN), 1x CAN-FD	2x USB2 (1xOTG, 1xHost), 3x UART, 4x I2C, 10/100 Ethernet MAC
Temperature	Consumer: -20°C to 95°C (Tj) Industrial: -40°C to 105°C (Tj)	Consumer: -20°C to 95°C (Tj) Industrial: -40°C to 105°C (Tj)	Consumer: -20°C to 95°C (Tj) Industrial: -40°C to 105°C (Tj)	Consumer: -20°C to 95°C (Tj)	Consumer: -20°C to 95°C (Tj) Industrial: -40°C to 105°C (Tj)	-20°C to 65°C (Ta)

*Genio 720 and 520 and 420 are pin to pin compatible.

**Genio 700 and 510 are pin to pin compatible.

MediaTek Genio 520/720 EVK

Key Features

- 8GB of LPDDR5
- 128GB UFS 3.1 (default booting device) and 64GB eMMC onboard
- Wi-Fi 6 (2x2) + BT5.3 wireless connectivity
- 2x MIPI CSI camera board with 13MP and 5MP camera modules
- 1x USB 3.2 port support DP (Type-C)
- 1x USB 3.2 port (Type-C), 1x USB 2.0 port (Type-C), 1x Micro SD card slot
- 1x eDP connector (reserved), 1x LVDS connector (reserved)
- 7 inch FullHD LCM with touch panel
- 1x 10/100/1000M Ethernet RJ45 connector, 40-Pin Raspberry Pi pin header, CAN-FD with D-Sub 9 pin connector, 2x 2-wire UART connector (Type-C), 2x 4-wire UART pin header
- 1x M.2 Key B slot (USB2.0), 1x M.2 Key E slot (PCIe), 1x M.2 Key E slot (SDIO)



MediaTek Genio 510/700 EVK

Key Features

- 4GB/8GB of LPDDR4X
- 64GB eMMC onboard
- Wi-Fi 6 (2x2) + BT5.2 wireless connectivity
- 2x MIPI CSI connectors with 13MP and 8MP cameras
- 2x USB 2.0 ports
- 1x Micro SD card slot
- 1x HDMI Tx port
- 1x 10/100/1000M Ethernet RJ45 connector
- 40-Pin GPIO
- A 7-inch Full HD LCM touch panel



MediaTek Genio 360 / 360P

Key Features

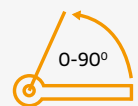
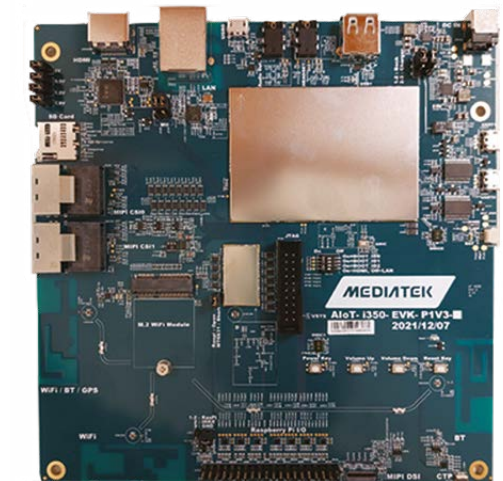
- 8GB LPDDR4X
- eMMC on board
- 16MP camera (30fps) or up to 6 FHD30 cameras via MIPI virtual channels
- 2x MIPI DSI (1x LVDS)
- 1x DP1.4/eDP1.2 (4L)
- WiFi 5
- 1x Gb Ethernet
- 1x PCIe 2.0
- 1x CAN-FD
- 2x USB 2.0
- 1x USB 3.2
- 7 inch full HD LCM touch panel



MediaTek Genio 350 EVK

Key Features

- 3GB of LPDDR4X
- 64GB eMMC onboard
- Wi-Fi 5 2x2 wireless connectivity
- 2x MIPI CSI connectors with 1.3MP cameras
- 2x USB 2.0 ports
- 1x Micro SD card slot
- 1x HDMI Tx port
- 1x 10/100M Ethernet RJ45 connector
- 40-Pin GPIO
- A 7-inch Full HD LCM touch panel



Lay Flat



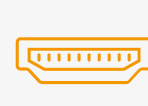
Dual Display



Camera Board



4K UltraHD



HDMI



Type-C



Wi-Fi-6 2x2



Android



Linux



Ubuntu

Overview

Supplier	Genio 350	Genio 360	Genio 360P	Genio 510	Genio 700	Genio 520	Genio 720	Genio 1200
ADVANTECH						OSM	OSM	Pico-ITX
ADLINK				OSM		OSM	OSM	SMARC
AMOBILE				SOM / SBC	SOM / SBC	SOM / SBC	SOM / SBC	SOM
GRINN					SOM / SBC			
INNOCOMM	SOM	SOM	SOM	SOM	SOM	SOM	SOM	
SECO				SMARC	SMARC			
VIA	SOM				SOM			SOM

MediaTek Genio 1200



I-Pi SMARC 1200

Edge AI Development Kit

- Standard SMARC Module Plus Carrier
- 4GB LPDDR4X, 64GB UFS
- 2x GbE, CAN bus, 3x MIPI-CSI
- 2x USB 3.0, 4x USB 2.0, CAN, SPI, I2C, GPIO
- Yocto Linux, Ubuntu

MediaTek Genio 1200



RSB-3810 & EPC-R3810

Edge AI Single Board Computer and Box

- 2.5" Pico-ITX single board computer
- 8GB LPDDR4X, 32GB eMMC
- Dual GbE, 1x 4-wire RS-232/422/485, 6 rear I/O configurations
- Android, Yocto Linux, Ubuntu



SOM-7000

Rich Wireless Connectivity Options

- SMARC 2.11 System on Module
- 8GB LPDDR4X, 16GB eMMC
- 2x 4-lane MIPI DSI, 2x MIPI CSI-2, 1x HDMI 2.0, 1x USB 3.1 and 3x USB 2.0, 12x GPIO
- Android 13, Yocto 4.0, Debian 12



MediaTek Genio 700

**SOM-SMARC-Genio700**

High-Performance Multimedia SOM

- SMARC Rel. 2.1.1 Module
- 8GB LPDDR4X, 64GB eMMC
- 1x Gigabit Ethernet (RGMII), 1x 100Mbit Ethernet (USB)
- 1x USB3.1, 1x USB2.0 Host/Slave, 4x USB2.0 Host, MIPI-CSI, 2x I2S port
- Linux Yocto Kirkstone, Android T (13)

**VAB-5000**

Fanless Low-Power Single Board Computer

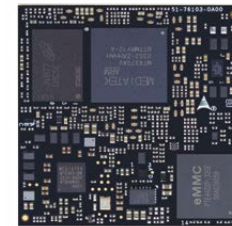
- Pico-ITX Single Board Computer
- 4GB/8GB LPDDR4X, 16GB eMMC
- 1x40-Pin Raspberry Pi-type GPIO header, 1x Micro coaxial 4-lane MIPI DSI, 2x USB 3.1 1x Micro USB 2.0, 1x Nano SIM card slot
- MIPI CSI camera, AHD camera, and eDP/LVDS display panel support
- Also available in the SMARC form factor
- Android 13, Yocto 4.0, Debian 12

**Grinn GenioSOM-700**

SOM for Advanced IoT Devices

- LGA312 System on Module
- 8GB LPDDR4, 64GB eMMC, 2x USB 2.0, 1x USB 3.1
- 1x PCIe, 1x eDP, 1x DP, 6x SPI, 4x UART, 1x AUX, 2x MSDC 7x I2C (up to 2x I3S included), 2x I2S, 1x PCM, 2x DMIC
- 4x CSI, 2x DSI, 1x DPI, 1x HDMI, 4x PWM, 1x RGMII
- Yocto Linux, Android

MediaTek Genio 510

**OSM-MTK510**

Compact and Rugged SOM

- OSM 45x45 mm Module
- 4GB LPDDR4X, 128GB eMMC
- Dual GbE, CAN bus, 1x MIPI-CSI, Bluetooth 5.0, HDMI/DP
- Ubuntu, Yocto, Android

**SOM-SMARC-Genio510**

High-Performance Multimedia SOM

- SMARC Rel. 2.1.1 Module
- 8GB LPDDR4X, 64GB eMMC
- 1x Gb Ethernet, 1x USB3.1, 1x USB2.0 Host/Slave, 4x USB2.0 Host, MIPI-CSI
- Linux Yocto Kirkstone, Android T (13)

MediaTek Genio 350

**SOM-3000**

Integrated AI Processor SOM

- 60x45x6.8 mm System on Module
- 2GB LPDDR4, 16GB eMMC
- 1x 4-Lane MIPI DSI, 1x HDMI 1.4, 2x 4-Lane MIPI CSI, 1x USB 2.0 Host, 1x USB 2.0 OTG, 1x SPI, 3x I2C, 2x UART
- Android 12, Yocto 3.1

MediaTek Genio Open Platform

MediaTek simplifies development by offering a single SDK for all SoCs. This single platform eliminates the need for developers to learn and manage multiple, individual SDKs, significantly reducing development time and complexity. The streamlined process allows for shorter development cycles and simplified codebases. Additionally, the unified SDK enhances code portability, allowing applications to be deployed on multiple Genio SoCs. This enables wider application compatibility and facilitates seamless integration across the Genio hardware ecosystem.

Scalable, Standard Software

- Standard Linux architecture & interfaces
- Upstream BSP (expert features with confidential IPs)
- Active migration to latest kernel
- Single SDK for the Genio family SoCs

AI Development Tools

- Software tools and APIs
- Verified AI models from MediaTek model hub and NVIDIA TAO NGC Catalog

Android Support



- 3 Android upgrade with vendor freeze
- 3-year security patch after last upgrade

Linux Support



- 4 year BSP update
- 3-year security patch after last upgrade
- Active migration to recent LTS Kernel

Ubuntu Support



- Lifecycle 10 years
- Follow Canonical's policy

NeuroPilot: MediaTek's Ecosystem for AI Development

MediaTek's NeuroPilot is an ecosystem of software tools and APIs designed to simplify the development of efficient AI applications on devices powered by MediaTek chipsets, specifically targeting the edge AI space. MediaTek's NeuroPilot technology enables executing AI tasks directly on the device reducing latency, improving security, and facilitating reliable and efficient offline operation.

Support for Popular AI Frameworks

Compatibility with frameworks like TensorFlow Lite, PyTorch, Caffe, and others allows developers to leverage existing models and code

IoT Model Hub

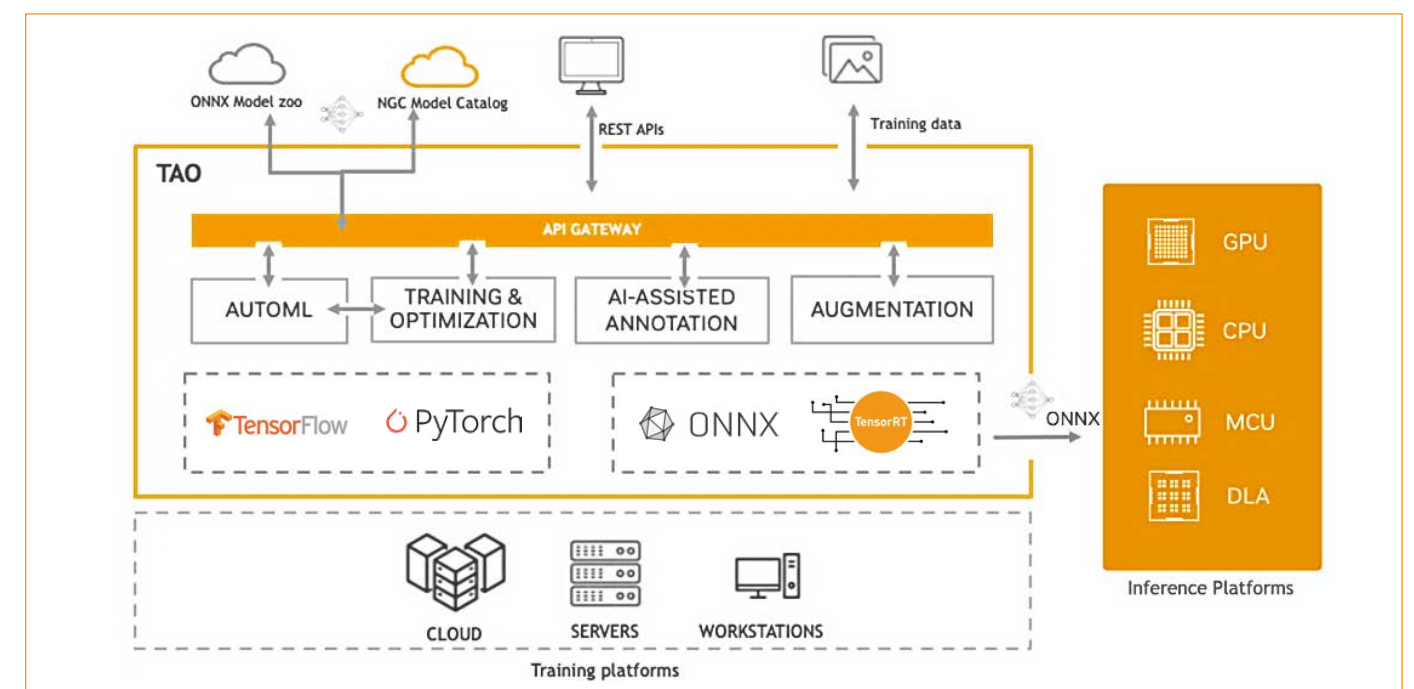
Set of pre-trained machine learning models ready for fine-tuning and deployable anywhere with AI enabled devices powered by MediaTek

Hardware Acceleration

Utilizes dedicated hardware components, MediaTek AI Processing Unit (NPU), within the chipset to accelerate AI computations, improving performance and power efficiency

NeuroPilot: SDK integrates NVIDIA TAO Toolkit

Combining the power of the NVIDIA TAO Toolkit with MediaTek's NeuroPilot solutions provides a robust and efficient workflow for deploying AI/ML models on the edge. The Genio IOI-Yocto ecosystem is compatible with a set of pretrained models from NVIDIA TAO Toolkit. These pretrained ONNX models can be seamlessly converted to TFLite format using NeuroPilot solutions, MediaTek's state-of-the-art proprietary AI/ML solution. This combination of TAO and NeuroPilot offers the flexibility and performance needed to meet your AI/ML needs, ensuring efficient and optimized inference on various Genio platforms.



MediaTek's IoT Open Linux, based on Yocto

MEDIATEK

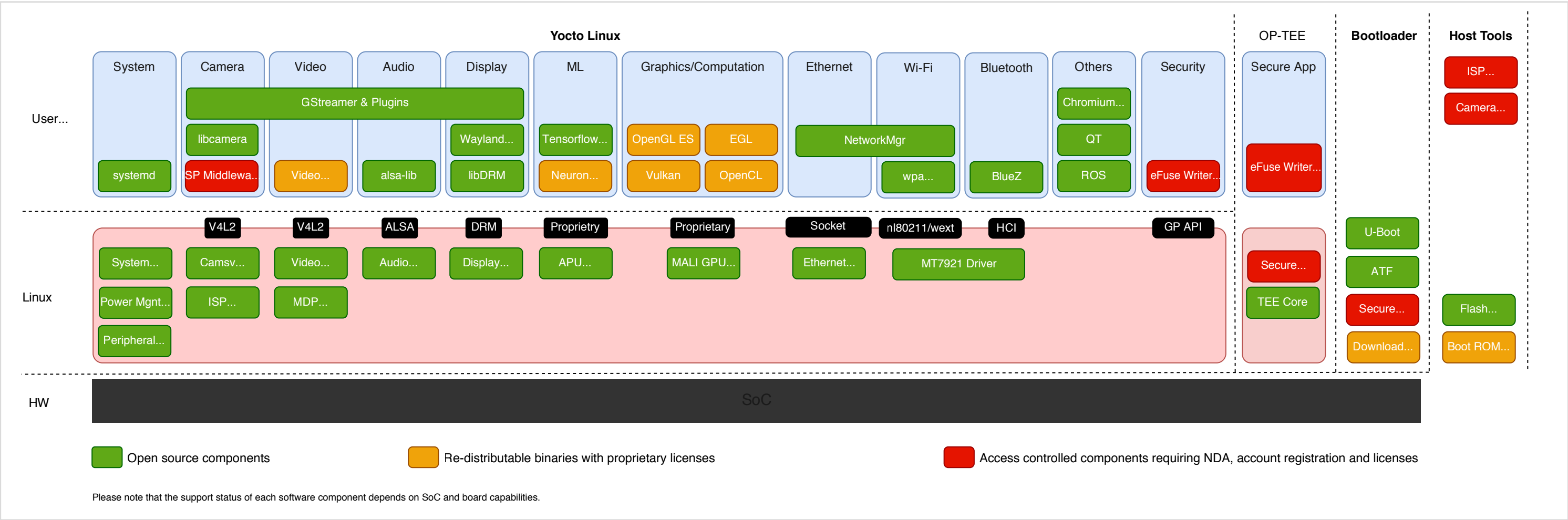
Derived from open source projects, IoT Yocto aims to conform to upstream interfaces and designs including:

■ Most components in the board support packages (BSP) for the Genio evaluation kits and development boards, including bootloader and Linux kernel, are forked from corresponding open source upstream projects and closely tracked to keep updated with the upstream

■ Some supporting packages, based on the collection of Yocto project, are patched for compatibility

■ Certain hardware drivers and supporting software are provided as proprietary packages that allow redistribution to be used with MediaTek Genio chipsets. Please read the license terms before using these components

Software Components used in IoT Yocto:



Features

Open and Standard

Based on standard Yocto Linux, all drivers will upstream to mainline, providing an easy to develop environment for users.

AI Accelerator

Integrated MediaTek AI Accelerator – Neuro-Pilot for a complete APU application in Genio series products and provide a standard TensorFlow lite interface.

Connectivity

Pre-integrated with MediaTek connectivity modules, quickly landing 5G/Wi-Fi 6/Wi-Fi 6E support in your IoT application.

Guides

IoT Yocto Overview

Based on the Yocto project, IoT Yocto provides board support packages (BSP) for IoT evaluation kits and development boards.

Get Started

Easy steps to set up the development environment, build an image, flash the image to the board, and connect it to the board.

IoT Tools

IoT tools are a set of tools to configure and interact with MediaTek Evaluation boards.

*The actual available functions are dependent on the operating systems, please check with your MediaTek contact for details

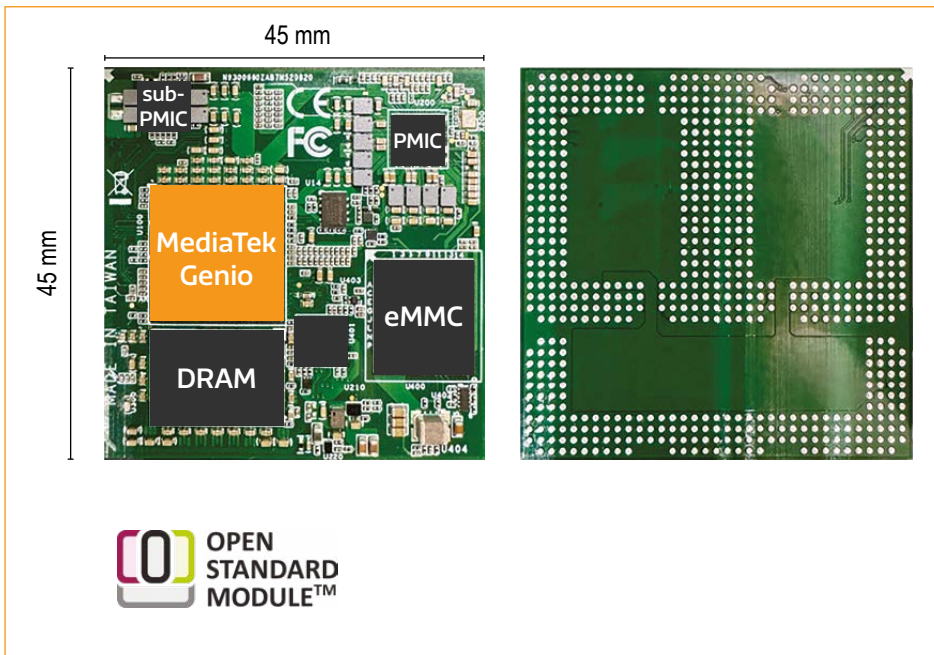
OSM for Compact Designs

The Open Standard Module (OSM) offers solderless BGA/LGA/FTGA mini modules that enable higher integration density, small footprint, and significantly reduced costs through direct PCB mounting. It offers machine-automated manufacturing with standardized interfaces, while maintaining open-source hardware and software flexibility.

This compact and powerful solution enables rapid development and deployment of embedded systems across various industries including factory automation, fleet management, gaming, EV charging infrastructure, medical devices, and more.

Benefits

- Small footprint: 45x45mm (Size-L)
- Machine processible
- Efficient power consumption
- Rugged and reliable



Partner Solutions

MediaTek provides OSM reference design documents to help you build you Genio OSM solutions.

ADLINK offer OSM solutions to help reduce product footprint and speed development time.

Key Features

- Genio 510 SoC
- Up to 8 LPDDR4, up to 128GB eMMC
- HDMI/DP, eDP, DSI graphic output
- 10/100/1000 RGMii Ethernet
- -40°C to 85°C
- 10 years product availability
- OSM 1.1 compliant



Enhancing Industrial Vehicle Safety with AI-Powered Multi-Camera Solutions

Industrial vehicles operate with significant blind spots due to elevated driver positions, increasing safety risks.

To address this, a robust multi-camera solution is essential – one that supports extended cable lengths while delivering real-time video processing with AI-driven recognition.



Challenge

Traditional camera systems struggle with extended cable lengths and real-time processing demands in industrial environments.



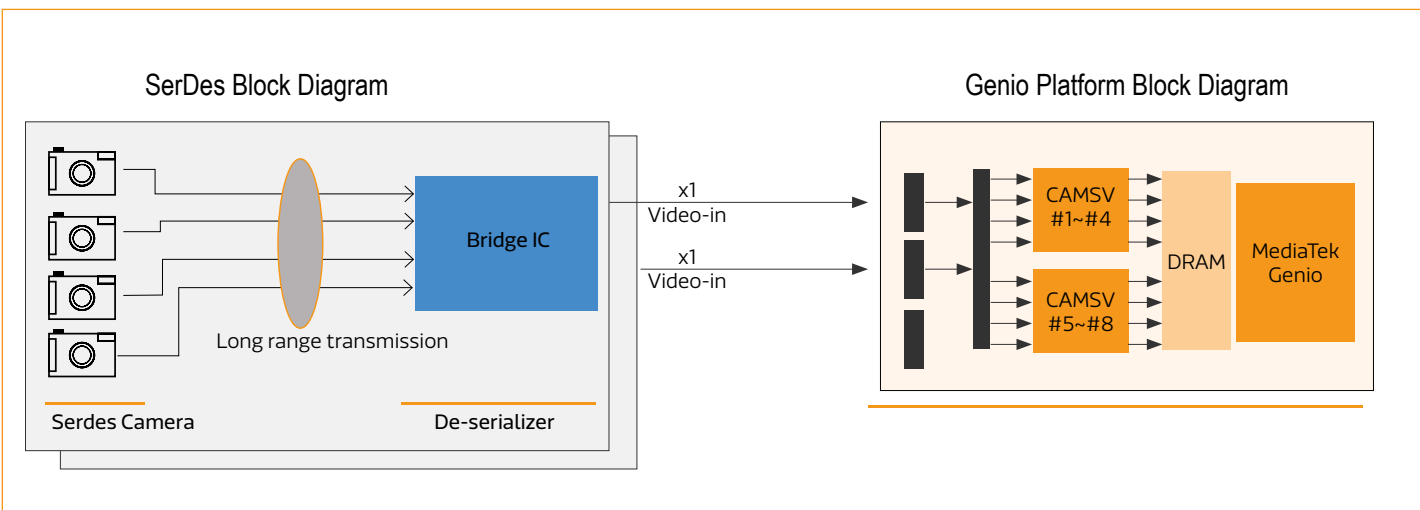
Solution

MediaTek's Genio platform features Virtual Channel technology with SER-DES interfaces, supporting 8 simultaneous camera feeds with advanced AI processing capabilities. This technology enhances situational awareness with cutting-edge AI capabilities.

Benefits

- **Processing Power:**
Up to 10 TOPs for real-time video processing
- **Camera Support:**
8 channels running simultaneously with Virtual Channel technology
- **Operating Systems:**
Android and Linux
- **AI Framework:**
MediaTek Neuropilot for AI-optimization
- **Reference Design:**
Validated solution available upon request

MediaTek Genio Multi-Camera Solution Block Diagram



Boosting Smart Manufacturing Productivity with Genio 1200

XC Tech's H08 Pro, a smart industrial device, powered by MediaTek's Genio 1200 SoC streamlines training, enables real-time monitoring and drives digital transformation in manufacturing.



Challenge

Manufacturers required high processing power, robust AI and multi-media capabilities, seamless connectivity, and an energy efficient solution that can train and improve workforce productivity.

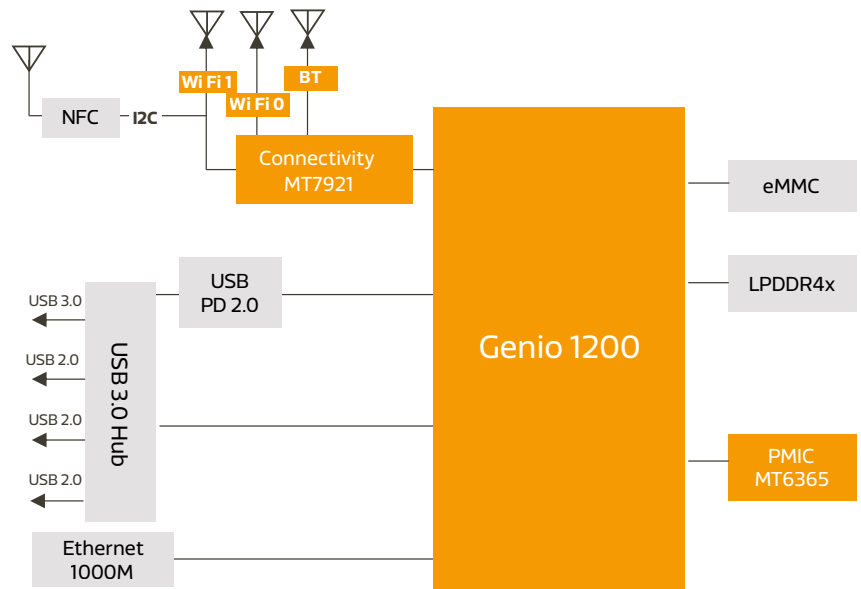


Solution

MediaTek's Genio 1200 SoC provided high computing power for real time data analysis, process monitoring and digital training. With AI, multimedia, industrial-durability and cost-efficient development, Genio 1200 SoC met all the requirements.

Benefits:

- **High compute performance:**
The Genio 1200 SoC handles heavy workloads simultaneously.
- **Automated employee training and quality monitoring:**
Supports digital training, and AI-driven real-time quality monitoring.
- **Seamless Integration:**
Integrates seamlessly with manufacturing systems and production lines.
- **Enhanced Adoption:**
20% faster development accelerates time-to-market and industry adoption.



Solution Block Diagram

At-Home Boxing Training with MediaTek's AI-Driven Edge Solutions

FightCamp, an AI-driven fitness solution scaled their product's capabilities with MediaTek's Genio 350 SoC, providing real-time feedback, better connectivity and upgrading their user experience.



Challenge

FightCamp required edge-AI capabilities for real-time feedback on boxing training, and higher computing power for multitasking while being energy efficient. It also required better connectivity to connect to more devices than just 4.

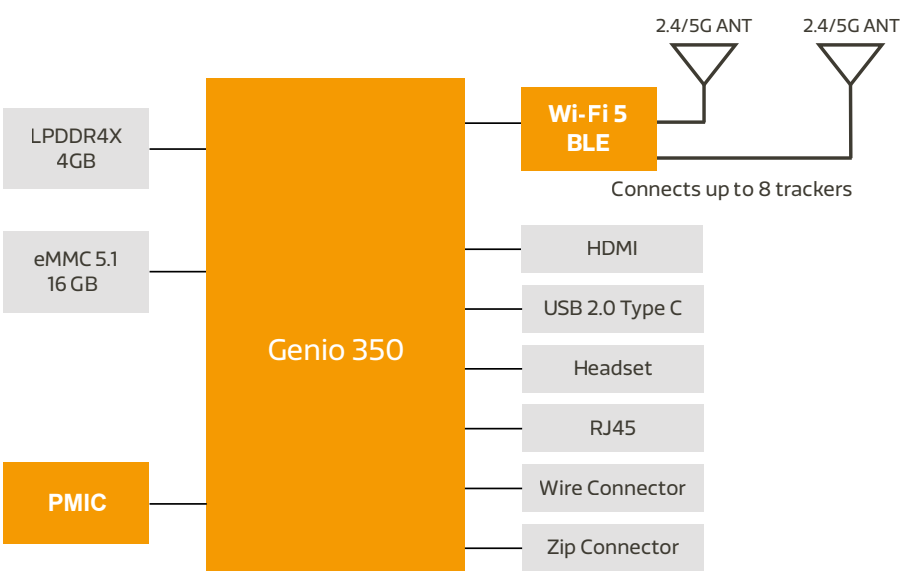


Solution

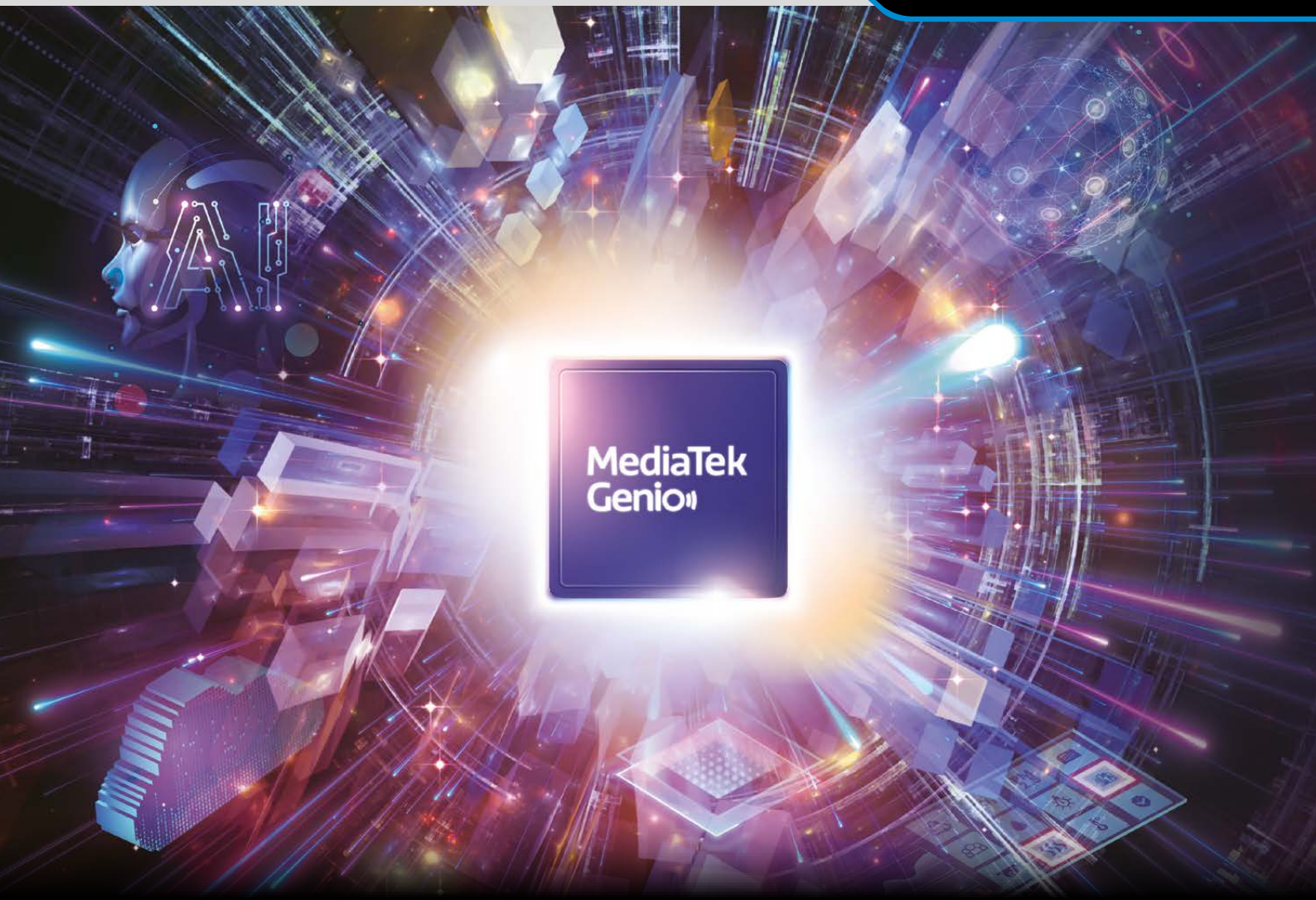
MediaTek's Genio 350 SoC provided FightCamp with robust AI processing, seamless connectivity and ability to handle intense AI tasks without overheating or draining. Edge AI enabled precise feedback during workouts.

Benefits:

- **Enhanced Connectivity:**
Supports multiple trackers of the fitness console simultaneously.
- **Real-time Feedback:**
Edge AI computing provides detailed feedback during workouts.
- **Higher processing power:**
Powerful processing allows the console to track punch metrics and training posture in real-time.
- **Power efficiency:**
Longer battery life along with handling intensive AI tasks.
- **Seamless Streaming:**
Seamless connectivity to a TV for streaming workouts live.



Solution Block Diagram



About MediaTek

MediaTek Incorporated (TWSE: 2454) is the world's 5th largest global fabless semiconductor company and powers more than 2 billion connected devices a year. We are a market leader in developing innovative systems-on-chip (SoC) for mobile device, home entertainment, connectivity, and IoT products. Our dedication to innovation has positioned us as a driving market force in several key technology areas, including highly power-efficient mobile technologies, industrial and automotive solutions, and a broad range of advanced multimedia products such as smartphones, tablets, TVs, 5G, Chromebooks, Voice Assistant Devices (VAD) and wearables.

Find your regional Rutronik contact!



info@rutronik.com | www.rutronik.com