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# MediaTek Genio» Platform

V 3.0



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# MediaTek Genio»

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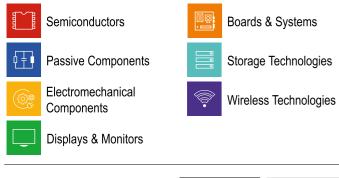


# Powering the New Era of AI Applications

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

MediaT Genio 1200	Genio	o» Genio	Genic	o» Genio»
		Media Genio 52	Genic	Dil

# Our Product Portfolio





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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.

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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.





# 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 <sup>®</sup> Cortex <sup>®</sup> -A pro
Integrated GPUs	Seamless rendering of graphics enha without compromising performance
Dedicated Al Processing Units (APUs)	Efficiently handles complex AI workloa
Robust Connectivity	Reliable 5G/Wi-Fi 6/Wi-Fi 6E/Bluetoo
Long-Lasting Battery Life	Genio SoCs dynamically switch betwo efficient cores for background activitie
10-Year Longevity Support	MediaTek offers a comprehensive 10- This commitment guarantees sustaine extended lifecycles, particularly in ind



# MEDIATEK

ocessors deliver the performance needed for demanding tasks

ances user experience and supports advanced functionalities

oads, enabling features like facial recognition and voice commands

oth connectivity ensures devices stay online and responsive

veen high-performance cores for demanding tasks and energyies, reducing power consumption

)-year longevity program for Genio SoCs. ned availability and ongoing assistance for applications demanding dustrial and healthcare settings.

Media	Tek Genio Po	ortfolio		
меділтек	MediaTek Genio⊎ 1200	NEW MediaTek Genio# 720	NEW MediaTek Genio# 520	
	Genio 1200	<b>Genio 720</b> (Pin compatible with Genio 520)	<b>Genio 520</b> (Pin compatible with Genio 720)	(P
Process	6nm	6nm	6nm	
CPU	4x Arm <sup>®</sup> Cortex <sup>®</sup> -A78, 2.2 GHz + 4x Arm <sup>®</sup> Cortex <sup>®</sup> -A55, 2.0 GHz	2x Arm <sup>®</sup> Cortex <sup>®</sup> A78, 2.4~2.6GHz + 6x Arm <sup>®</sup> Cortex <sup>®</sup> A55, 2.0GHz	2x Arm <sup>®</sup> Cortex <sup>®</sup> A78, 2.0~2.2GHz + 6x Arm <sup>®</sup> Cortex <sup>®</sup> A55, 1.8~2.0GHz	
GPU	Arm Mali-G57 MC5	Arm Mali-G57 MC2	Arm Mali-G57 MC2	
NPU	2x MDLA2.0 + 2x VP6, 4.8 TOPS	MediaTek 8th generation NPU, up to 9 TOPS, Total up to 10 TOPS	MediaTek 8th generation NPU, up to 9 TOPS, Total up to 10 TOPS	
Audio DSP	Hi-Fi 4	N/A	N/A	
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-ch 16-bit LP4X-4266 up to 8GB 2-ch 16-bit LP5(X)-6400 up to 16GB	
Storage	UFS3.1 2L,eMMC5.1, SPI NOR	UFS3.1 2L,eMMC5.1, SPI NOR	UFS3.1 2L,eMMC5.1, SPI NOR	
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)	Single: UW5K60 or 4K60 Dual: 2.5K60 + 2.5K60 +MIPI-DSI/LVDS/eDP/DP(Type C)	
Video Input	3x MIPI CSI-2, 1x HDMI 2.0 16+16MP or 48MP@30fps 6x FHD30 with virtual channels	2x MIPI-CSI-2, 16+16MP or 32MP@30fps "or" 6x FHD30 with virtual channels	2x MIPI-CSI-2, 16MP@30fps or 6x FHD30 with virtual channels	
VDEC	4K90, H.265/H.264/VP9/AV1	4K60, H.265/H.264/VP9	4K60, H.265/H.264/VP9	
VENC	4K60, H.265/H.264	4K30, H.265/H.264	4K30, H.265/H.264	
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 PCle2.0, 1x USB3.2 Gen1 (Type C) (1 shared with DP), 3x USB2.0, 1x GbE MAC (TSN)	1x F
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)	

MediaTek	MediaTek
Genio# 700	<sub>Genio</sub> 510
<b>Genio 700</b>	<b>Genio 51</b>
(Pin compatible with Genio 510)	(Pin compatible with 0
6nm	6nm
2x Arm <sup>®</sup> Cortex <sup>®</sup> -A78, 2.2 GHZ +	2x Arm <sup>®</sup> Cortex <sup>®</sup> -A78, 2
6x Arm <sup>®</sup> Cortex <sup>®</sup> -A55, 2.0 GHz	4x Arm <sup>®</sup> Cortex <sup>®</sup> -A55,
Arm Mali-G57 MC3	Arm Mali-G57 M
1x MDLA3.0 + 1x VP6, 4.0 TOPS	1x MDLA3.0 + 1x VP6,
Hi-Fi 5	Hi-Fi 5
2/4-ch 16-bit LP4(X)-3733,	2/4-ch 16-bit LP4(X)-
up to 8GB	up to 8GB
eMMC 5.1, SPI NOR	eMMC 5.1, SPI N
Dual Display, FHD60+4K60	Dual Display, FHD60
MIPI-DSI/eDP + HDMI/DP	MIPI-DSI/eDP + HD
2x MIPI CSI-2,	2x MIPI CSI-2
16+16MP or 32MP@30fps	up to 16+16MP or 32M
8x FHD30 with virtual channels	8x FHD30 with virtual o
4K75/4K60, H.265/H.264/VP9/AV1	4K60, H.265/H.264/V
4K30, H.265/H.264	4K30, H.265/H.2
1x PCle2.0, 1x USB3.2 Gen1, 2x USB2.0,	1x PCle2.0, 1x USB3.2 Gen
4x UART, 1x GbE MAC (TSN)	4x UART, 1x GbE MAG
Consumer: -20°C to 95°C (Tj)	Consumer: -20°C to 9
Industrial: -40°C to 105°C (Tj)	Industrial: -40°C to 10

## Incredible Performance, Advanced Multimedia and AI empowered SoC's



# 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)



Available July 2025

# 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 1200 EVK

### **Key Features**

- 8GB of LPDDR4X
- 64GB eMMC (default booting device) and 128GB UFS 2.1 onboard
- Wi-Fi 6 (2x2) + BT5.2 wireless connectivity
- 2x MIPI CSI camera board with 13MP and 8MP camera modules
- 1x USB 3.2 port support DP (Type-C), 2x USB 3.2 port (Type-A), 1x USB 2.0 port (Micro USB)
- 1x Micro SD card connector
- 2x HDMI port (IN x1, OUT x1), 1x eDP connector (reserved)
- 1x LVDS connector (reserved)
- 1x 10/100/1000M Ethernet RJ45 connector
- 40-Pin Raspberry Pi pin header, CAN-FD with D-Sub 9 pin connector, 1x 2-wire UART connector (Micro USB), 1x 4-wire UART pin header
- 7 inch FullHD LCM with touch panel, 1x M.2 Key B slot (USB 3.2 interface), 1x M.2 Key E slot (PCIe or SDIO interface)

### 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



Display



Android

### Hands-On Evaluation and Rapid Prototyping











### MediaTek Genio 1200

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

# kontron



# 3.5"-SBC-i1200

**Rich I/O Extension** 

- 3.5" Single Board Computer
- 8GB LPDDR4X, 32GB eMMC
- Yocto





# 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



## SOM-7000

- SMARC 2.11 System on Module
- 8GB LPDDR4X, 16GB eMMC
- 3x USB 2.0, 12x GPIO
- Android 13, Yocto 4.0, Debian 12



### Rapid Prototyping in Different Form Factors

1x DP, 1x DSI, 1x LVDS, 1x 2.5 GbE LAN, 1x GbE LAN, 1x USB 3.2 Gen 1, 4x USB 2.0

### **Rich Wireless Connectivity Options**

2x 4-lane MIPI DSI, 2x MIPI CSI-2, 1x HDMI 2.0, 1x USB 3.1 and

## MediaTek Genio 700

## MediaTek Genio 510









# 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-Iane 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**



# 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











- SMARC Rel. 2.1.1 Module
- 8GB LPDDR4X, 64GB eMMC

# MediaTek Genio 350





# **SOM-3000**

- 60x45x6.8 mm System on Module
- 2GB LPDDR4, 16GB eMMC
- OTG. 1x SPI. 3x I2C. 2x UART
- Android 12, Yocto 3.1

### Rapid Prototyping in Different Form Factors

# **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

1x Gb Ethernet, 1x USB3.1, 1x USB2.0 Host/Slave, 4x USB2.0 Host, MIPI-CSI Linux Yocto Kirkstone, Android T (13)

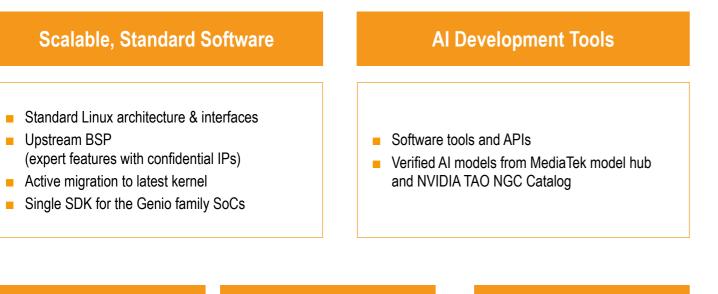
### Integrated AI Processor SOM

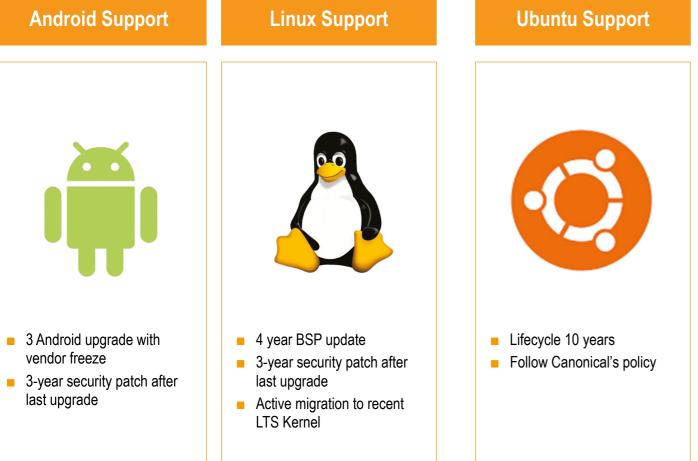
1x 4-Lane MIPI DSI, 1x HDMI 1.4, 2x 4-Lane MIPI CSI, 1x USB 2.0 Host ,1x USB 2.0

### One Platform, Multiple Applications

# 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.

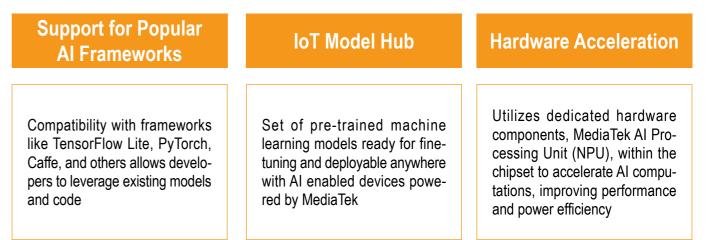




# MediaTek Genio Development

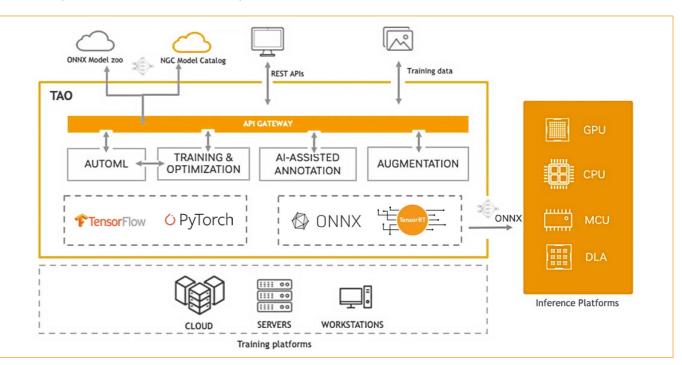
# NeuroPilot: MediaTek's Ecosystem for AI Development

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.



# 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.



### Streamline Development with a Single SDK

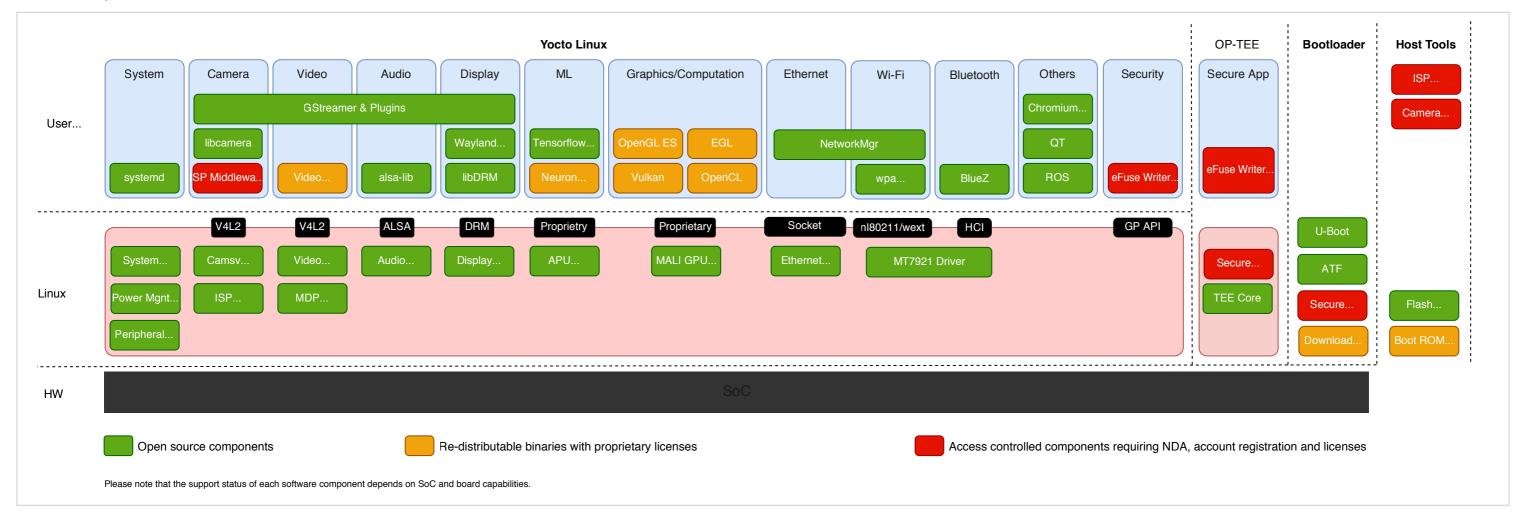
# MediaTek's IoT Open Linux, based on Yocto

#### 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.

#### **Al Accelerator**

Integrated MediaTek Al 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

www.rutronik.com

#### 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.

### Simplify Your Software and Service Integration



### 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

# Reference Design

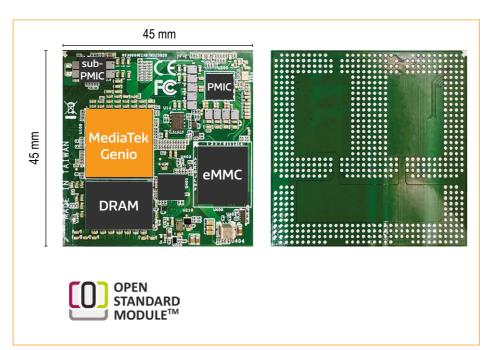
# **OSM for Compact Designs**

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.



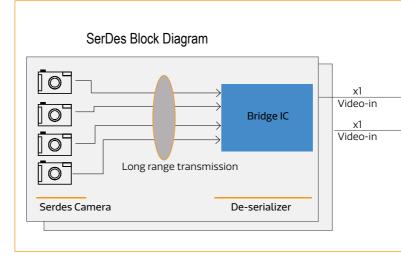
Traditional camera systems struggle with extended cable lengths and real-time processing demands in industrial environments.



Solution

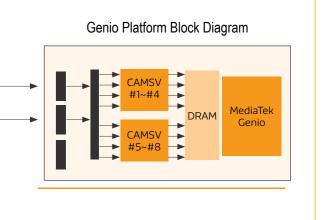
MediaTek's Genio platform features Virtual Channel technology with SER-DES interfaces, supporting 8 simultaneous camera feeds with advanced AI processing capabilities. This technology enhances situational awareness with cutting-edge AI capabilities.

### MediaTek Genio Multi-Camera Solution Block Diagram





### 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 Al Framework: MediaTek Neuropilot for AI-optimization Reference Design: Validated solution available upon request



# **Case Studies**

MediaTek Genio Platform

# **Case Studies**

# **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

**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

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.



### **Benefits:**

- High compute performance: The Genio 1200 SoC handles heavy workloads simultaneously.
- Automated employee training and guality monitoring: Supports digital training, and Al-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.

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

FightCamp, an Al-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.

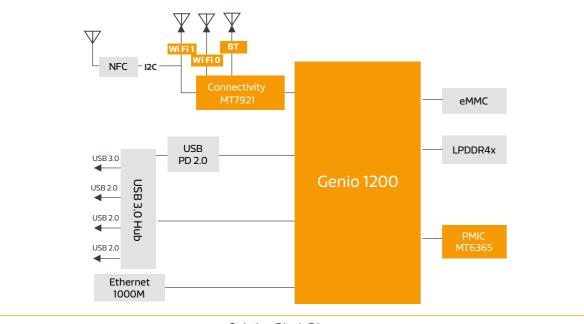


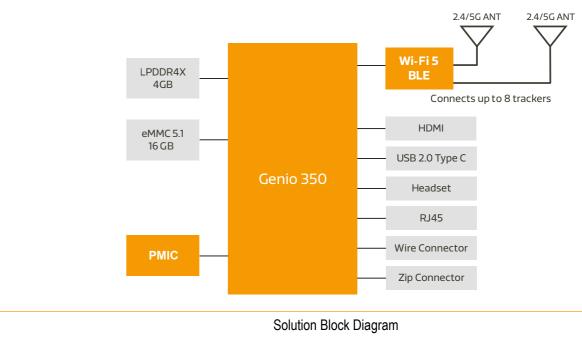
FightCamp required edge-AI capabilities for real-time feedback on boxing training, and higher computing power for multitasking while being energy efficient. It also required better connectivity to connect to more devices than just 4.



**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.





# Solution Block Diagram



all the requirements.



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





### 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!



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