

ADLINK Revolutionizes the Smart Coffee Machine

MediaTek Genio 510 AI capability in an OSM module design enables innovative user experiences

Case Study

Background

The coffee industry is undergoing a significant transformation with the integration of artificial intelligence (AI) and smart technologies into coffee machines. Modern consumers desire features like automatic personalization, voice command, app control, and predictive maintenance. This shift makes seamless and intuitive brewing solutions more critical than ever, moving beyond traditional brewing to intelligent, connected experiences. Beyond consumer use cases, these benefits multiply in the office, retail, and catering environments. The same approach can be extended to smart refrigerators, ovens, vending machines and other appliances.

Challenge

Developing AI-powered smart coffee machines presents several challenges for manufacturers. These include:

- **Space Constraints:** Modern coffee machines offer little room for additional computing hardware.
- **Power Budget:** Energy-efficient appliances, such as the coffee machine have limited power budget for advanced AI computing SoCs.
- **Cost Sensitivity:** Smart features must fit in the target cost bracket.
- **Complexity and Friction:** Traditional setups often hinder usability due to complexity in the user experience.

Results:

The collaboration between ADLINK and MediaTek, leveraging the Genio 510, enables a transformative experience for smart coffee machine development. Manufacturers can achieve:

- **Reduced Cost of Ownership:** OSM modules eliminate the need for custom board design, reduce certification costs, and simplify long-term support.
- **Faster Time-to-Market:** With robust software ecosystem support, OSM modules enable rapid prototyping and deployment.
- **Small Footprint, Big Performance:** OSM Computer-on-Modules (CoMs) can run complex AI inference tasks efficiently.
- **Optimized Power Efficiency:** The Genio 510 balances high performance with exceptional power efficiency.
- **Seamless Connectivity:** Built-in support for various wireless and wired connections ensures effortless integration into smart home systems and cloud services.

Solution

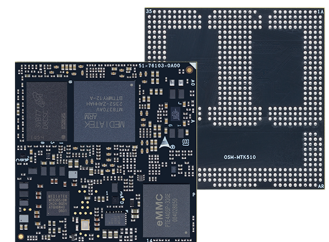
ADLINK, in collaboration with MediaTek, offers a compelling answer to these challenges through their Open Standard Module (OSM) solutions, powered by the MediaTek Genio 510. OSM is a compact, modular, and standardized form factor designed for next-generation embedded computing, utilizing surface-mount technology (SMT) for direct integration, which eliminates bulky connectors, lowers costs, and simplifies production. The ADLINK OSM-MTK510, featuring the MediaTek Genio 510 processor, is engineered for efficiency and excels in comprehensive AI workloads for real-time decision-making and managing complex data processing.

Key Features and Benefits

- **MediaTek Genio 510:** The MediaTek Genio 510 is a versatile, power-efficient edge AI platform built on a 6nm process technology, making it suitable for fanless enclosure designs and low-power solutions. Its features make it ideal for advanced IoT applications like smart coffee machines.
- **Powerful Processing:** It features a hexa-core CPU with two Arm Cortex-A78 processors (up to 2.2 GHz) and four Arm Cortex-A55 processors (up to 2.0 GHz). This combination delivers high performance while ensuring power efficiency.
- **Advanced AI Capabilities:** An integrated Neural Processing Unit (NPU) delivers up to 3.2 TOPS (Tera Operations Per Second) acceleration, enabling real-time and secure edge AI inference for voice command and app control, automatic personalization & predictive maintenance.
- **Enhanced Wireless Connectivity:** Supports Wi-Fi 6 and Bluetooth 5.2/5.3 via PCIe or USB2.0 interface, enabling seamless connection to apps, the cloud, and smart home systems.
- **Flexible I/O and OS Support:** Offers rich I/O capabilities including PCIe 2.0, multiple USB, GbE MAC, and various UART/I2C/SPI connections. It supports Android, IoT Yocto, and Ubuntu OS, providing developers with flexibility.
- **Industrial Durability:** Supports both consumer (-20°C to 95°C) and industrial (-40°C to 105°C) temperature grades, making it robust for high-heat and high-moisture environments inside coffee machines.

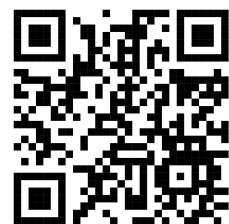


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STANDARD
MODULE™



OSM module based on
MediaTek Genio 510

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Conclusion

By adopting AI-capable, OSM-based computer-on-modules powered by MediaTek Genio 510, ADLINK was able to unlock the perfect balance of performance, efficiency, and time-to-market in smart coffee machines. This technology enables personalized brewing experiences, predictive maintenance, and seamless integration with smart home ecosystems, revolutionizing the coffee experience for consumers and businesses alike.