NVIDIA-based AI embedded systems: For application in vehicles

Syslogic is presenting two new embedded systems for AI inference applications. The two embedded box PCs are based on NVIDIA's Jetson TX2 platform and are particularly well suited for use in vehicles.

Waldshut-Tiengen, September 2, 2020

Embedded specialist Syslogic is a member of the NVIDIA Jetson partner program and is one of the leading manufacturers of AI-capable industrial computers based on NVIDIA's Jetson platform. With the RS A2 vehicle computer and the RM A2 vehicle computer Syslogic completes its portfolio for AI (artificial intelligence) applications.

AI meets mobile computing
The recently launched vehicle computers were specially developed for mobile use. They are used for AI applications in vehicles such as AGVs (automated guided vehicles), special or railway vehicles, and in agricultural machinery.

The RS A2 and RM A2 vehicle computers differ in terms of height and interfaces. Compared to the RS A2, the RM A2 features four additional LAN interfaces that can be configured as PoE (Power over Ethernet). Both computers feature the same NVIDIA TX2 SoM (System on Module) from the Jetson series, which is combined with a motherboard developed and manufactured by Syslogic. The platform was specially developed for AI inference applications such as object or person recognition, autonomous driving, predictive maintenance, or condition monitoring of mobile machines or vehicles. The Jetson TX2 platform combines serial and parallel processor technology, i.e. CPU and GPU. With 256 NVIDIA CUDA computing units, the TX2 module also handles demanding inference applications, thus offering AI at the edge.

NVIDIA Jetpack SDK reduces effort and expenses
However, the clever processor technology is not the only reason why chip manufacturer NVIDIA holds the top position in AI computing today. In addition to the SoMs, the company offers a comprehensive software package. The Jetpack software development kit (SDK) includes the board support package, the parallel computing platform Cuda, support for real-time operating systems, and Linux4Tegra. The Jetpack SDK also has libraries for deep learning and computer

vision and supports drivers for various sensors. NVIDIA also provides a wide range of developer tools. With the Jetpack SDK, NVIDIA makes entry into AI applications as easy as possible. After all, software is by far the biggest cost driver in AI projects. The Jetpack SDK significantly reduces development efforts and expenses for companies by providing a wide range of tools and libraries.

Industrial AI applications require robust hardware
To ensure that the strengths of the NVIDIA Jetson platform also exhibit their full effect in mobile applications, Syslogic integrates the SoMs into ultra-rugged embedded systems. With more than thirty years of experience in the embedded market, Syslogic knows exactly what matters. The RS A2 and RM A2 vehicle computers are designed for long-term reliable operation under difficult conditions.

The devices stand out through their clever electronic design, the absence of moving parts, screw-on plug connectors, and a robust housing that meets the IP40 protection class. The AI vehicle computers are also suitable for the broadened temperature range from –40 to +80 °C (–40 to 176 °F) at component level. For vehicle use, they also feature an integrated ignition controller and a disturbance-free CAN interface.

Syslogic always keeps the standard products in stock. With its own European development and production facilities, the company is also known for its ability to implement customer-specific solutions quickly and efficiently based on its standard devices. For example, depending on the application, Syslogic supplements I/Os or wireless connections.

In addition to vehicle computers, Syslogic offers NVIDIA-based embedded systems specifically for railway applications, for smart city, or for industrial automation.

Technical specifications for AI Vehicle Computer RS/RM A2 (Nvidia Jetson TX2)

CPU	Denver 2 (Dual-Core) 2GHz
	ARM Cortex-A57 (Quad-Core) 2GHz
Graphics	256-core Pascal GPU 1.3GHz
RAM	8 GB (4ch x 32-bit LPDDR4 RAM soldered on board)
Interfaces/ports	Display Port
	2x USB 3.0

	2x Ethernet 10/100/1000Mbit (M12 female x-coded)
	2x active/passive CAN, ESD-protected and isolated, Mini PCIe Socket
	4x PoE+ IEEE802.3at 10/100/1000Mbit (only RM A2)
Wireless	Optional LTE/UMTS/GSM, WiFi, GNSS
Operating system	Linux 4 Tegra (Ubuntu)
Temperature range	–40 to +80 °C (–40 to 176 °F) at component level

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