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AMD Powers AI Track Inspection Solution for Japanese Bullet Train Operator JR Kyushu

— AMD Kria™ K26 SOM-powered vision AI box processes camera images at high speeds to inspect tracks more efficiently —

SANTA CLARA, Calif., Feb. 13, 2024 (GLOBE NEWSWIRE) -- AMD (NASDAQ: AMD) today announced that JR Kyushu Railway Company (JR Kyushu), a Japanese bullet train operator, is using the AMD Kria™ K26 System-on-Module (SOM) to automate track inspection. This AI-based solution replaces traditional methods of inspecting miles of track on foot, creating significant efficiencies by improving the inspection speed, cost and accuracy to meet Japan's stringent railway safety requirements.

JR Kyushu bullet trains operate across an enormous territory of more than 1,455 miles of railroad tracks, with trains traveling at speeds of up to 161 mph. Safety is the company's number-one priority, requiring diligent track inspections carried out at specified intervals.

To increase the efficiency and accuracy of assessments, JR Kyushu chose an AMD-powered solution from Tokyo Artisan Intelligence (TAI), which uses high-speed image processing and advanced AI capabilities to detect and inspect loose bolts and other track issues.

"With the new solution from TAI and AMD, we were able to improve the efficiency of conventional track inspection, and we anticipate further improvements in inspection efficiency through future functional enhancements," said Kazuhiro Sakaguchi, deputy manager in the Engineering Division, Shinkansen Department at JR Kyushu.

At the heart of the track inspection solution is a vision computing box attached to a cart that inspects tracks at speeds of 12 mph. The box features a high-speed camera that uses the FPGA-based Kria K26 SOM for AI-enhanced pre-and-post data and image processing. The Kria K26 SOM is a compact, all-in-one embedded platform that integrates a custom-built AMD Zynq™ UltraScale+™ MPSoC with DDR memory, nonvolatile storage devices, a security module, and an aluminum thermal heat spreader.

"The most important benefit of AI in this case was reduction of cost," said Hiroki Nakahara, co-founder and CEO of TAI. "Replacing the conventional method of inspecting tracks on foot with carts has led to a dramatic improvement in operational efficiency."

The programmability, durability, and embedded intelligence of the AMD Kria SOM-powered solution also make it adaptable to the unique and changing conditions, geographies, and needs of JR Kyushu's territory and ridership. Since railways are installed in a natural environment, the ability to update the Kria SOM to suit the daily changing natural conditions is critical and helps future-proof investments.

“AMD Kria SOMs are accelerating innovation at the edge and simplifying solution development through deployment,” said Chetan Khona, senior director of Industrial, Vision, Healthcare and Sciences Markets, AMD. “JR Kyushu is a perfect example of how the endless programmability of Kria SOMs, combined with edge AI computing, can automate processes and dramatically enhance operational efficiency across a variety of applications, from machine vision to industrial robotics and AI/ML computing.”

Supporting Resources

- Read the AMD and JR Kyushu customer case study here
- Learn more about the AMD KRIA K26 SOM
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