Press Information

Corporate

TDK develops SensorGPT™ to accelerate artificial intelligence at the edge and advance Generative AI techniques

– Addresses key scalability barriers and deployment challenges inherent to intelligent edge IoT solutions.
– Improves scalability by generating large and diverse datasets that accelerate the development of AI solutions for edge applications.
– Reduces dependency on real data from 80% (market standard) to 10%, enabling accelerated innovation and faster time-to-deployment.

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TDK Corporation (TSE:6762) announces advancements in sensor technology that optimize and accelerate the deployment of smart IoT solutions, SensorGPT™. This technology uses generative AI, signal processing, statistical methods, and simulations to create and manage sensor data at scale. TDK's SensorGPT will empower both the smart IoT market and the emerging Ambient IoT market segment to overcome key scalability challenges. It streamlines model development and deployment, cutting both time and cost, and significantly enhancing the performance and efficiency of edge AI models and applications.

Data is the bedrock of intelligence in smart edge systems – yet today, data collection consumes more time than building the intelligence it is meant to power. Nearly 80% of AI solution development time is spent on data collection and curation (Forbes). As the demand for edge AI continues to accelerate, projected to become the standard in 2026 (Gartner), data availability has become the primary barrier to scalability. SensorGPT directly addresses this challenge by reducing reliance on real-world data through intelligent sensor data synthesis, cutting data collection efforts from 80% to nearly 10%, and enabling faster, more scalable edge AI development.

Synthesizing sensor data with AI
By using advanced techniques to expand and enhance existing datasets, edge AI model building time that takes months can be reduced to weeks, said Jim Tran, Corporate Officer and General Manager, Americas HQ and Deputy General Manager, Technology & Intellectual Property HQ.
TDK USA Corporation. "By tapping into generative AI modeling, simulation, and more, engineers can use AI to generate additional, high-quality data that reflects real-world conditions — turning data into a scalable resource."

SensorGPT data synthesis technology advancements:
– Generative AI models: train generative models over limited real-world data to learn underlying patterns and generate high-quality synthetic data that faithfully mimics real-world data.
– Physics-based simulation models: leveraging physics-based and mathematical models to simulate and generate synthetic sensor data.
– Signal processing methods: employing mathematical and computational techniques to simulate data reflecting the dynamics and characteristics of real sensor outputs.
– Data augmentation techniques: automatically transform existing sensor data into rich, diverse datasets spanning a wide range of conditions and scenarios.
– Assisted annotation: streamline the labeling of training data, increasing its usefulness and quality for model training.

SensorGPT generates 90% similarity between synthetic and real-world sensor data, enabling the use of the synthetically generated data for faster edge AI solution deployment. Once deployed, it drives a virtuous cycle of feedback-driven improvement in which real-world data progressively refines and strengthens synthetic models over time, which in turn leads to more efficiently deployed models.

Differentiation of SensorGPT to existing technologies:
– Improve scalability by generating large and diverse datasets that quickly help to create AI solutions for edge applications.
– Faster innovation and accelerated development by providing quick access to data for prototyping, testing, and deploying initial models.
– Customizability by providing tools to tailor data to specific sensors, smart IoT applications, and real-world scenarios and conditions they operate in.
– Enabler for edge intelligence intercepting the growing demand for quality data for smart edge AI applications.

TDK's new SensorGPT ultimately accelerates prototyping and proof of concepts, enabling orders-of-magnitude dataset size expansion, depending on the application and use case, significantly reducing edge AI model building time from 5+ months down to a few weeks.

Main applications
– IoT, Wearables, Mobile
– Ambient IoT
– Industrial IoT
– Physical AI applications

Main features and benefits
– Synthetically generated data, cutting real-world data collection efforts from 80% to nearly 10%, enabling teams to build and scale edge AI solutions faster than ever
– Broader coverage of application scenarios, conditions and edge cases
– More robust edge AI model performance
– Faster model iteration cycles
– Accelerates prototyping and POCs enabling dataset size expansion by orders-of-magnitude unlocking Machine Learning at the edge with significantly less real-world data
– Lower data acquisition costs
– Shorter path from idea to deployable model

About TDK Corporation
TDK Corporation (TSE:6762) is a global technology company and innovation leader in the electronics industry, based in Tokyo, Japan. With the tagline “In Everything, Better” TDK aims to realize a better future across all aspects of life, industry, and society. For over 90 years, TDK has shaped the world from within; from the pioneering ferrite cores to cassette tapes that defined an era, to powering the digital age with advanced components, sensors, and batteries, leading the way towards a more sustainable future. United by TDK Venture Spirit, a start-up mentality built on visions, courage and mutual trust, TDK’s passionate team members around the globe pursue better—for ourselves, customers, partners, and the world. Today, the state-of-the-art technologies of TDK are in everything, from industrial applications, energy systems, electric vehicles, to smartphones and gaming, at the core of modern life. TDK’s comprehensive, innovative-driven portfolio includes cutting-edge passive components, sensors and sensor systems, power supplies, lithium-ion and solid-state batteries, magnetic heads, AI and enterprise software solutions, and more—featuring numerous market-leading products. These are marketed under the product brands TDK, InvenSense, Micronas, Tronics, TDK-Lambda, TDK SensEI, and ATL. Positioning the AI ecosystem as a key strategic area, TDK leverages its global network across the automotive, information and communication technology, and industrial equipment sectors to expand its business in a wide range of fields. In fiscal 2026, TDK posted total sales of USD 16.6 billion and employed about 107,000 people worldwide.

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