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EDGEMATRIX

Augmenting Smart Cities with Video Edge AI

Smart cities around the world are leveraging edge AI to transform how they manage valuable physical assets and spaces. To this end, "Edge + AI + Video" is a key technological trend integral to realizing smart cities. After all, for safe and secure societies, it is necessary to be able to detect crimes, accidents, and disasters and at the same time grasp the on-site situation on a monitor. To make AI analysis possible in real time without delay, it is crucial to perform AI processing at the site (edge) instead of sending a video to the cloud. This is the foundational idea on which EDGEMATRIX was formed.

Interestingly, EDGEMATRIX was born in 2019 as a spin-off of the Japanese AI project team at CLOUDIAN, headquartered in Silicon Valley. This team conducted a demonstration experiment using AI to identify the type of vehicle on the highway to display targeted ads on smart billboards. In this use case, transmitting high-definition video to the cloud caused a delay in processing, increased communication costs, and reduced recognition accuracy due to image compression. The team recognized that it was necessary to bring an AI processing server to the site (edge). "Based on that experience, we have developed a compact device 'Edge AI Box' with a built-in high-performance GPU, WiFi/LTE/5G communication, camera connection, and other interfaces to enable video edge AI at any site," says Hiroshi Ohta, Co-founder and CEO of EDGEMATRIX.

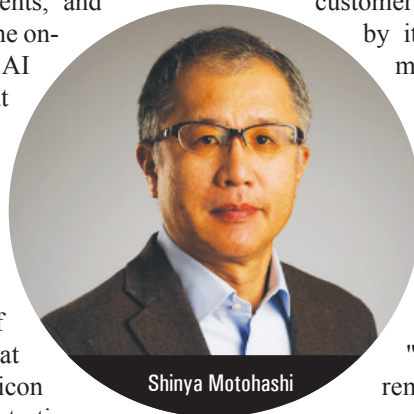
"EDGEMATRIX is an industry pioneer that can provide video edge AI resources in an end-to-end and one-stop-shop manner. We have been developing and providing video edge AI devices (Edge AI Box) even before 2019," notes Shinya Motohashi, Co-founder and COO. The Edge AI Box is different from cheap AI cameras because it is a robust and reliable device. It is often used to detect and notify the condition of people, vehicles, and objects, such as intrusion into railroad tracks, traffic volume on roads, number of parking lots, and congestion in large-scale customer attraction facilities. In addition, it ensures safety and security by issuing danger warning at railway

stations, fall accident warning at nursing care facilities, and suspicious person detection at material storage areas. The company also performs on-site implementation such as camera and Edge AI Box installation and optimization.

Through its EDGEMATRIX store, the company enables customers to purchase and use AI apps developed by its partners (currently 30 types, increasing monthly). Customers can start using video edge AI immediately without having to develop their own AI application—a business model similar to iPhone App Store.

Furthermore, given that video edge AI will be installed at various bases that are difficult for humans to manage, the company, in 2020, started offering "EDGEMATRIX platform service," for remote management of the Edge AI Box, cameras, and AI apps. A major feature of the EDGEMATRIX platform service is that it utilizes AI to not only detect events from on-site video, but also allows remote confirmation of the on-site situation in real time using video. In this regard, the EDGEMATRIX platform service uses P2P technology like Zoom and Skype and is used to connect people to on-site camera images. The platform has a function to notify AI warnings by e-mail or other means, and an Edge View function that allows multiple AI-processed videos to be monitored from anywhere via an internet browser. "This IoT can monitor on-site images in real time and is a unique feature compared to IoT that uses conventional sensors," comments Motohashi.

Evidently, the ability to handle all aspects of video edge AI is what differentiates EDGEMATRIX from other companies that only develop AI. "Our strength is the accumulation of know-how from visiting sites, installing video edge AI, and optimizing it," Ohta mentions. In the last few years, AI development has been made easy using open source and cloud services. EDGEMATRIX believes that the mechanism for distributing these AI apps will help customers to use AI easily. With this in mind, the company will continue to add more applications to its EDGEMATRIX Store and improve their quality while refining its other video edge AI solutions and services to serve customers in the best possible way. **ACO**



Shinya Motohashi