



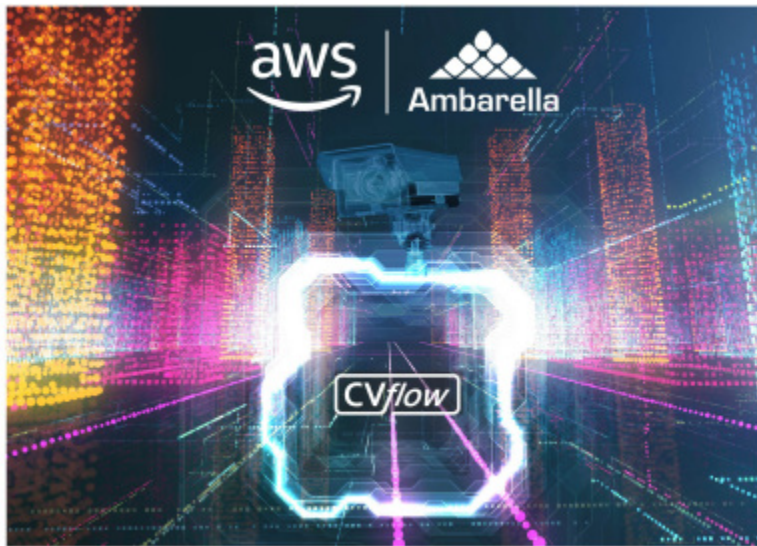
## Ambarella Enables Artificial Intelligence on a Wide Range of Connected Cameras Using Amazon SageMaker Neo

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### Ambarella collaborates with AWS on single-click machine learning for edge applications

LAS VEGAS--(BUSINESS WIRE)--Jan. 2, 2020-- Ambarella, Inc. (Nasdaq: AMBA), an artificial intelligence (AI) vision silicon company, today announced that Ambarella and Amazon Web Services, Inc. (AWS) customers can now use Amazon SageMaker Neo to train machine learning (ML) models once and run them on any device equipped with an Ambarella CVflow®-powered AI vision system on chip (SoC).

This press release features multimedia. View the full release here: <https://www.businesswire.com/news/home/20200102005052/en/>



Ambarella and Amazon Web Services (AWS) collaborate on single-click machine learning for edge applications and announce joint customer VIVOTEK. (Graphic: Business Wire)

optimized for Ambarella's CVflow neural network accelerator. The compiler applies a series of optimizations that can make the model run up to 2x faster on the Ambarella SoC. Customers can download the compiled model and deploy it to their fleet of Ambarella-equipped devices. The optimized model runs in the Amazon SageMaker Neo runtime purpose-built for Ambarella SoCs and available for the Ambarella SDK. The Amazon SageMaker Neo runtime occupies less than 10x the disk and memory footprint of TensorFlow, MXNet, or PyTorch, making it much more efficient to deploy ML models on connected cameras.

"Ambarella is in mass production today with CVflow AI vision processors for the home monitoring, enterprise video security, and automotive markets," said Chris Day, vice president of marketing and business development for Ambarella. "The ability to select an Ambarella SoC and compile a trained ML model with a single click is a powerful tool that makes it possible for our customers to rapidly bring the next generation of AI-enabled products to market."

Manufactured using an advanced 10-nanometer process, Ambarella's CVflow SoC family enables the design of compact, high-performance vision systems with ultra-low power operation. For example, the Ambarella CV22 CVflow SoC delivers computer vision processing at full 4K or 8-megapixel resolution at 30 frames per second (fps), while its image signal processor (ISP) provides outstanding imaging in low light conditions and high-contrast scenes, further enhancing the computer vision capabilities of the chip. The CV22 also includes a suite of advanced security features to protect against hacking including secure boot, TrustZone®, I/O virtualization, and support for online upgrades over the air (OTA).

"AWS has the broadest and deepest set of ML and AI services focused on solving some of the toughest challenges facing developers. Amazon SageMaker is a fully managed service that provides every developer and data scientist with the ability to build, train, and deploy machine learning models quickly," said Bratin Saha, vice president, Machine Learning & Engines, Amazon Web Services, Inc. "We're excited that VIVOTEK is using SageMaker Neo to simplify the deployment of ML models at the edge on Ambarella CVflow-powered IP cameras."

VIVOTEK (TWSE:3454), a leading global IP surveillance solution provider and customer of both Ambarella and AWS, will now be able to deploy advanced ML capabilities to a new camera product line—powered by the Ambarella CV series SoCs—more quickly using Amazon SageMaker Neo.

Until now, developers had to manually optimize ML models for devices based on Ambarella AI vision SoCs. This step could add considerable delays and errors to the application development process. Ambarella and AWS collaborated to simplify the process by integrating the Ambarella toolchain with the Amazon SageMaker Neo cloud service. Now, developers can simply bring their trained models to Amazon SageMaker Neo and automatically optimize the model for Ambarella CVflow-powered SoCs.

Customers can build an ML model using MXNet, TensorFlow, PyTorch, or XGBoost and train the model using Amazon SageMaker in the cloud or on their local machine. Then, they can upload the model to their AWS account and use Amazon SageMaker Neo to optimize the model for Ambarella SoCs. They can choose CV25, CV22, or CV2 as the compilation target. Amazon SageMaker Neo compiles the trained model into an executable that is

Dr. Steve Ma, vice president of engineering, Brand Business Division, VIVOTEK INC. said, "We're excited that we will be able to explore training and deploying the machine learning models increasingly demanded by our customers to our future Ambarella CV series powered cameras with Amazon SageMaker Neo, potentially saving us months of hand-tuning the individual models for optimal performance on the edge. Using Amazon SageMaker Neo ensures that our IP camera solutions are fully able to leverage the market-leading computer vision capabilities of the Ambarella SoC."

Ambarella will demonstrate the integration with Amazon SageMaker Neo during CES 2020 to select customers and partners.

The URL for this news release and the related image: <https://www.ambarella.com/news-events/>

#### **About Ambarella**

Ambarella's products are used in a wide variety of human and computer vision applications, including video security, advanced driver assistance systems (ADAS), electronic mirror, drive recorder, driver/cabin monitoring, autonomous driving, and robotic applications. Ambarella's low-power system on chips (SoCs) offer high-resolution video compression, advanced image processing, and powerful deep neural network processing to enable intelligent cameras to extract valuable data from high-resolution video streams. For more information, please visit [www.ambarella.com](http://www.ambarella.com)

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