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- Chunhui Zhang, Director of Cainiao ET logistics laboratory.

Cainiao ET Lab adopts Jetson AGX Xavier to accelerate the development of autonomous logistic vehicles (ALVs)

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Cainiao XG—The Autonomous Logistic Vehicle (ALV) by Cainiao ET Lab

The Cainiao XG ALV is designed for the last-mile delivery by Cainiao ET Lab to address increasing package quantities and labor cost. It’s equipped with several sensors such as lidars, cameras, GPS, and inertial measurement units (IMUs). The main computing unit, NVIDIA Jetson AGX Xavier, processes the signals and runs AI models to perceive the surrounding environment, make decisions, and control the vehicle. Initially, Cainiao used an x86-based solution but they switched to a Jetson AGX Xavier because it better met their performance, power, and sensor requirements.

NVIDIA Platform

Jetson AGX Xavier platform provides an easy-to-use, compute-capable and, single-chip module solution for autonomous logistic vehicles. AGX Xavier with the NVIDIA JetPack™ SDK allowed Cainiao to quickly port their algorithms and design from an x86-based solution to the Carmel ARM-based CPU on AGX Xavier. The support of TensorFlow and the powerful NVIDIA® TensorRT™ made it easy for Cainiao to run deep learning models and continuously optimize them through testing, development, and deployment.
Cainiao Results

With JetPack, it took Cainiao only four weeks to port their algorithms and design from an x86-based solution to Jetson AGX Xavier. The powerful TensorRT tools increased AI model performance by approximately 10X, allowing Cainiao to run more complicated AI models and achieve better overall system capability. The power-efficient AGX Xavier system-on-module (SoM) provided a longer battery life, yielding a dramatically longer operation time between charges.

Cainiao XG has been deployed in several logistic parks and college campuses, providing last-mile delivery service in Hangzhou, Shanghai, Chengdu, and other major cities in China.

About Cainiao

Cainiao Network Technology Co., Ltd., was founded by an Alibaba-led consortium in May 2013, aiming to establish a data-driven, open, collaborative, and shared socialized logistics platform and smart logistics company. Their platform spans delivery, warehouse, pick-up, rural, and cross-border logistics networks, covering 224 countries and regions globally. Their mission is to realize delivery anywhere in China within 24 hours and across the globe within 72 hours.

Cainiao ET Lab aims at the research and development of cutting-edge technology to empower the logistics sector. Now it’s mainly focused on autonomous driving.