



Sun Singapore Selects AMD Powered EdgeAI Box from Planet Spark to Deliver Smart-Parking Solution

AMD, PlanetSpark, and Aupera Technologies Team up with Sun Singapore to Enable Advanced, AI-Based Solutions for Parking Structures

PARTNER



SUN SINGAPORE

INDUSTRY

Industrial

CHALLENGES

Staffing shortages have left call-center-managed parking structures unable to quickly respond to system failures, resulting in customer dissatisfaction and revenue losses.

SOLUTION

The AMD + PlanetSpark + Aupera solution has enabled Sun Singapore to build an AI-based smart park solution that helps customers provide better parking services and monetize them.

RESULTS

The solution has demonstrated license plate reading accuracy of 99%. It also enables advanced features like parking spot vacancy detection and violation enforcement.

AMD TECHNOLOGY AT A GLANCE

AMD Zynq™ UltraScale+™ MPSoC

Sun Singapore Systems Pte. Ltd. is the largest smart parking solutions provider in Singapore. Sun Singapore's car park solutions include SunPark® cashless parking systems that use ERP technology to take payments; SunPark Parking Guidance Systems that use ultrasonic sensors and video for seamless traffic management, and a barrierless Integrated Smart Parking System that uses video, and a mobile app to enforce parking fees. The company has deployed more than 1,600 parking solutions across Singapore, including the country's main airport, shopping malls, office buildings, and residential car parks.

CHALLENGE

In Singapore, most car parks are managed by a centralized call center. If the electronic parking system has a fault, the call center receives an alert from the system and dispatches a mobile service technician to fix the problem.

Since the pandemic, many companies have suffered from a labor crunch, so while they are aware that there is a fault in the system, they don't have enough resources to dispatch to the car parks to resolve the issue.

A big challenge for car park operators is knowing how long the system will be down, as this impacts revenue and promotes customer dissatisfaction. They also need to be able to track how long a barrier arm is missing, how long a barrier arm stayed up and did not come down,

how long drivers had to wait to enter or leave the car park, and how much paper is left on the receipt roll.

The technology inside most electronic parking systems in Singapore is more than two decades old. Today's car parks need more data and AI to better manage efficient parking in order to:

- 1) Predict when the car park will reach peak capacity.
- 2) Forecast future car park revenue and occupancy rates.
- 3) Monitor seasonal parking/hourly parking trends.
- 4) Identify reasons for sudden increase/decrease in revenue or occupancy rate. (e.g., lunchtime free parking).
- 5) Simulate when to increase or decrease parking rates to achieve higher revenue.
- 6) Receive instant, automated alerts when car park system malfunctions.
- 7) Use Big Data for predictive maintenance.

Sun Singapore offers solutions that address these key issues.

SOLUTION

Sun Singapore's SunPark system uses PlanetSpark's EdgeAI Box X7, powered by AMD Zynq™ UltraScale+™ MPSoCs, to improve vehicle license plate recognition (LPR) accuracy at parking car park entry and exit lanes. The FPGA-based AMD

device offers multiple CPUs and other compute resources that help the PlanetSpark AI solution deliver cutting-edge features, including lane jam detection, accidentspot detection, barrier control, and parking fee assessment. It also provides Sun Singapore with the flexibility to change and retrain AI models and algorithms to implement other features, including reserved parking lot management and EV charging space monitoring.

The PlanetSpark EdgeAI Box X7 is a low-latency, low-power box primarily designed for video analytics or computer vision for smart cities, smart buildings, and machine vision applications. The box features a long product life cycle, operates in harsh environments—from -30 degrees to 70 degrees Celsius, and delivers wide model support along with a latency-optimized video pipeline.

“We looked at GPU-based solutions that we knew could be used for complex calculations on large amounts of data, but we ultimately decided to go with an FPGA-based edge AI solution because it offered low latency, low power consumption, real-time inferencing, and the ability to adapt to changing AI models and algorithms,” said Eddie Ng, senior sales manager at Sun Singapore. “With EdgeAI, we can deliver new applications to improve our car parking system features.”

Ng said PlanetSpark helped Sun Singapore design and manufacture an X7-base control board and custom I/O board for its SunPark solution. Meanwhile, Aupera Technologies helped design and develop FPGA firmware and AI solutions as well as provided full stack software tools and skills for retraining and deploying edge AI models.”

RESULT

“The AMD-PlanetSpark-Aupera solution has demonstrated license plate reading accuracy of 99%,” Ng said.

“Aupera’s VMSS 2.0 platform is helping Sun Singapore continuously retrain the model after deployment to achieve the high levels of accuracy,” said Mahdi Ghodsi, engineering director at Aupera Technologies. “We’re also helping with parking spot vacancy detection, and parking violation enforcement, providing a total solution for smart parking.”

Ghodsi added that Aupera’s “no-code” platform helps customers, like Sun Singapore develop AI applications quickly and easily. He also noted that the solution works with regular cameras to provide cost efficiency and flexibility for the customer.

Ng added that a VIP parking management system has also been developed with the multi-company solution that can alert the call center when an unauthorized vehicle is parked in a VIP spot.

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About [Sun Singapore](#)

About Sun Singapore Systems

Started as a small R&D firm in 1993, Sun Singapore Systems Pte. Ltd. has evolved to become Singapore’s largest supplier of automated car parking systems. The company is focused on making car parking easier and smarter. Its products and solutions include its EPS (Electronic Parking System using ERP technology), PGS (Parking Guidance System), vPGS (Video based PGS), Integrated Smart Parking System, and more. For more information, visit the Sun Singapore website at <http://sunsingapore.com/>

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