OEM Use Case: Retail

Embedded Vision: AI vision driving digital signage

Initial situation

e-con Systems helped a US-based provider of retail kiosks and digital signages with a High dynamic Range (HDR) camera that leverages biometric facial identifiers to serve personalised content to service station visitors. The solution had to withstand unpredictable outdoor conditions. Complex optical customisation was required due to the physical constraints of the application but was still delivered within a short product development cycle.

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What the client needed

The customer required a next-generation, interactive self-service kiosk for petrol delivery that could operate entirely unmanned, reducing staffing costs and improving efficiency. A critical success factor was the integration of an AI-powered camera system capable of advanced facial analysis, including biometric identifiers for secure customer authentication.

This capability not only ensured reliable identification but also unlocked new revenue opportunities. By analysing customer emotions and behaviours, the kiosk could deliver highly relevant information and personalised advertising in real time.

Operationally, a major challenge was ensuring operability in outdoor environments. It had to be able to meet lighting and other imaging aspects related to different weather patterns.

See3CAM CU20 HDR camera

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The solution

The most appropriate solution was the See3CAM_CU20, a 2 MP HDR camera which comes with a wide operating temperature range (-40ºC to 85ºC). It also had a wide vertical FOV to recognise people up to 30-feet away and then deliver personalised user experiences, including promotions.

Key camera requirements

- Ability to operate in a wide operating temperature range
- High resolution - 1080p with YUV format
- Easy to integrate with AI algorithms for facial recognition

Customisation

A complex solution to enable the camera to work with a coverage of 2-8ft within a 2ft working distance. The camera was mounted and rotated through 90-degrees to get the full FOV on the vertical side before then rotating the image through 90-degrees within in the application.

This enabled:

- A wider FOV that eliminated any chance of image blur
- Quick integration to AI algorithms for anomaly detection

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Compliance

The completion of pre-compliance emission testing processes helped clear FCC certifications that require electronic devices to operate safely and not to interfere with other communications.

Results and benefits:

The introduction of the self-service kiosks have enabled faster transactions, and an improved customer experience. But for the business they have opened up a range of new revenue streams personalised to the customer based upon the data, behaviour and emotions of that individual.

- Seamless customer experience in unattended kiosks
- Fully certified to stay compliant with industry regulations
- 50,00,000+ monitor hours clocked to date

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QUAD Advanced Systems and e-con Systems have formed a strategic partnership to deliver end-to-end camera solutions tailored for retailers using self-service kiosks and digital signage. By combining their expertise, the two companies strengthen their position within a key industry sector and provide innovative tools that enhance customer engagement.

Intelligent embedded vision is transforming retail by enabling digital signage solutions powered by advanced camera technology. These systems support people counting and demographic analysis, capturing valuable image data that allows retailers to deliver personalized advertisements based on factors such as gender, age, and viewing time.

Your Advanced Systems team are here to help you with your OEM integration requirements. Work with us to develop solutions that take advantage of these intelligent, embedded vision systems that are driving significant improvements by delivering enhanced data and insights that directly contribute to world-class industry experiences.