

IT in HK

CUHK develops trolley monitoring system for HKIA

by Dylan Bushell-Embling | Sep 14, 2017 7:49am



CUHK's Department of Systems Engineering and Engineering Management has helped develop a real-time baggage trolley monitoring system to improve service quality at the Hong Kong International Airport.

The department collaborated with Airport Authority Hong Kong and the Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies (LSCM R&D

Centre) to build the AI-enabled system.

The system can achieve a detection accuracy of 92% to help frontline staff make proper and timely allocation of trolleys for passengers.

Maintaining a steady supply of baggage trolleys has been a major challenge for the airport, with around 13,000 trolleys distributed throughout the airport to cope with the heavy flow of traffic taking over 1,100 flights daily.

Using machine learning techniques, image-based technologies and existing surveillance cameras, the system allows workers to monitor trolley availability at all pick-up points, making allocation of resources more efficient.

Different pick-up points are given signals representing levels of availability – a green alert for a normal supply of more than 50 trolleys, a yellow alert for quantity dropping below 50 and a red alert for empty racks.

To preserve privacy, the system is able to automatically blur visual contents other than trolley racks. All images are also encrypted and require specific private applications to decrypt from viewing.

"By using machine learning techniques such as support vector machines and neural networks, we are able to use video data to build trolley detectors that can identify four different types of trolley and conduct the smart counting," project lead professor Cheng Chun Hung said.

"Thanks to HKIA for providing the testing site and solid support, the detection rate of the system has increased from 87% to 92%."

Because trolley management is a major challenge for airports worldwide, the system has the potential to be exported, and the HKIA can serve as a showcase to demonstrate its business benefits, added Airport Authority general manager Chris AuYoung.



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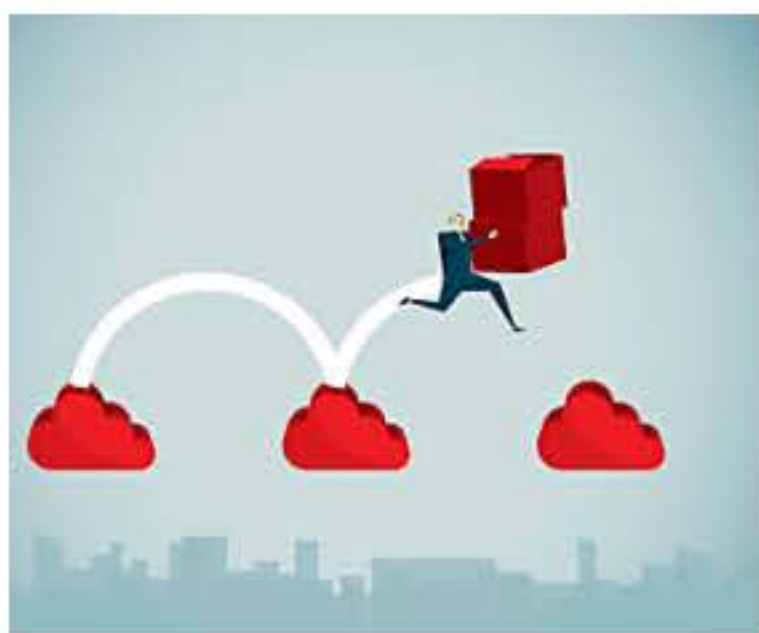
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