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TARIKH: 11 MEI 2022 (RABU)



PLUS highway uses Nvidia GPUs and software for number plate recognition

BY Alexander Wong 11 May 2022 12:46 pm Comment

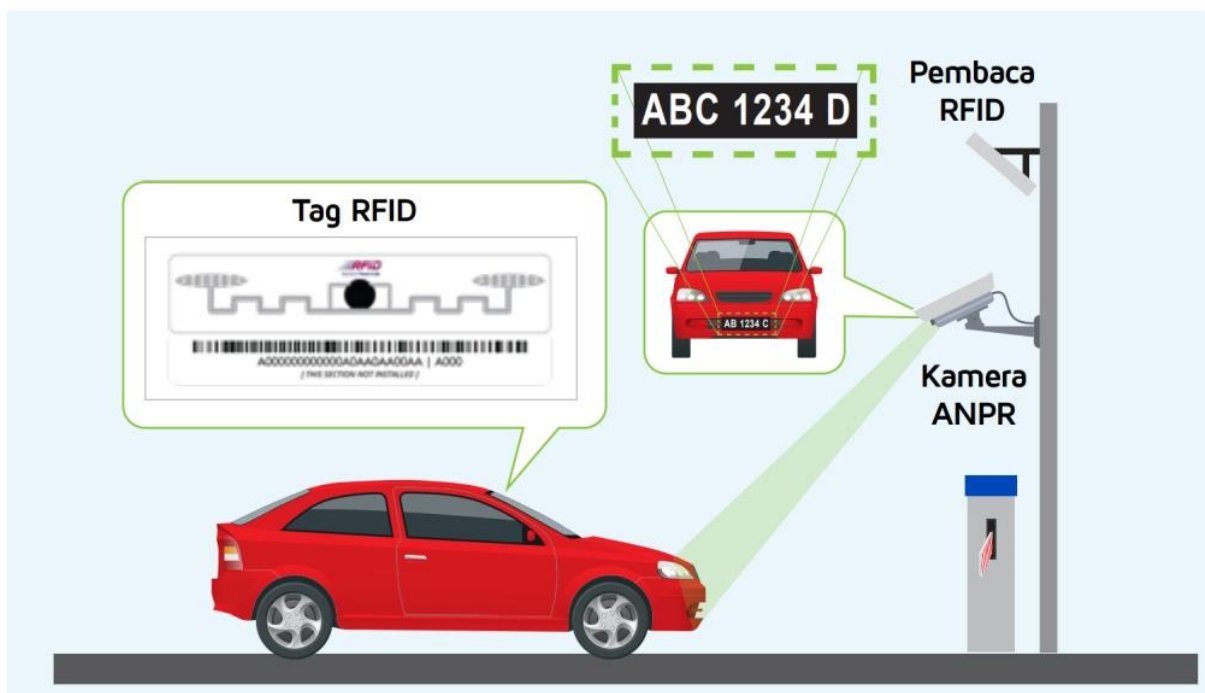


In case you missed it, PLUS has deployed RFID with Automated Number Plate Recognition (ANPR) throughout the North-South Expressway. This is seen as the first step toward a barrier-free Multi-Lane-Free-Flow (MLFF) experience which the Malaysian authorities expect to implement by 2025. Nvidia recently revealed that the ANPR system is actually powered by their computer vision solution that uses a network of Nvidia GPUs.

According to Nvidia's blog, the ANPR system was implemented by Tapway, a Malaysian-based startup and Nvidia Metropolis partner, which has been working with PLUS since 2019. Using cameras and AI, it aims to reduce congestion for more than 1.5 million daily highway users. In case you didn't know, there are different toll rates charged for different classes of vehicles and there are attempts to cheat the system by exchanging cards on the highway to get lower toll charges. Having dedicated lanes for different vehicle classes would slow down traffic and that's where Tapway's VehicleTrack system comes in.

Nvidia shared that Tapway has trained and ran AI models using Nvidia GPUs and software so that it can read a vehicle's number plate and class, make and colour in just 50 ms, which is 1/10 of a blink of an eye. It claims to work with speeds up to 40km per hour while vehicles approach the toll plaza. Nvidia added that the VehicleTrack system works in all light and weather conditions with a consistent 97% accuracy. This is made possible with Nvidia's Triton Inference Server, a single GPU that can handle up to 50 simultaneous video streams.

At the moment, PLUS has installed 577 cameras and it plans to expand to nearly 900 cameras in 92 toll plazas to meet its goal of freely flowing traffic.



When PLUS introduced RFID with ANPR in October 2021, the number plate recognition was used for vehicle verification to detect, analyse and resolve most common RFID issues automatically in the background without interrupting a customer's journey. The RFID and ANPR system was meant to facilitate a faster drive-through rate at the toll plaza lanes with speeds up to 30km/h versus 20km/h for SmartTAG.

Jom RFID!





Kaedah penggunaan lorong yang betul ketika melalui plaza tol

MASUK



KELUAR



MASUK



KELUAR





Pastikan masuk dan keluar dari lebuhraya menerusi lorong MyRFID yang disediakan



Masuk menggunakan lorong Touch 'n Go atau SmartTAG tetapi keluar menggunakan tag Touch 'n Go RFID ataupun sebaliknya

Nota: Sekiranya kenderaan anda mempunyai SmartTAG dan Tag RFID, simpan peranti SmartTAG sekiranya memilih untuk menggunakan Tag RFID.

Technically, it is possible for the system to solve payment disputes if an RFID-tagged vehicle enters the highway via TNG or SmartTAG lane but exits via the RFID lane. Since the ANPR has recorded your entry point, the correct toll charges will be deducted from your eWallet when you exit the highway via RFID. However, PLUS' current terms of use still require all vehicles to enter and exit the highway using the same payment lane.



Clear legal framework is required before barriers can be removed from highways

Before MLFF can be implemented, there needs to be a clear legal framework to enforce fraud and bad payment situations. Before the “palang” can be removed for RFID lanes to enable Single Lane Free Flow (SLFF) implementation, operators must be assured that all highway users including non-RFID users using the lane can be charged accordingly.

In other countries where MLFF is implemented, highway users without RFID will be billed and given a grace period to settle outstanding toll charges. Failing to do so, they will be slapped with late fees and heavier penalties. For this to take place, tougher laws against toll evaders are needed in Malaysia before the toll barriers can be removed.

For ANPR to work effectively, there’s also the need to enforce standardised number plates which is a problem in Malaysia. If a fancy number plate can’t be read by an actual human, it would be even harder for any AI to recognise the characters.

According to JPJ, the usage of fancy number plate designs is against the law and has urged road users to report them. It was also reported recently that Malaysia is exploring new technology for vehicle registration and this may include RFID embedded number plates. Transport Minister Dr Wee Ka Siong said RFID would allow enforcement to be carried out through automation to ensure accurate readings of vehicle registrations, and this would help to minimise cost.