Plus using AI to smooth traffic flow, prevent drivers from scamming toll system

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TECHNOLOGY

Wednesday, 11 May 2022
4:15 PM MYT

Plus has installed 577 cameras to date will expand to nearly 900 camera at 92 toll plazas. — FAIHAN GHANI/The Star

Plus Malaysia Bhd is leveraging on artificial intelligence to ease traffic congestion on toll highways across Malaysia by having its traffic camera system read and detect a vehicle's identifying features in just seconds.

VehicleTrack, implemented by KL-based startup Tapway, allows Plus traffic cameras to detect a vehicle's license plate, class, make and colour in as little as 50 milliseconds even when the vehicle is travelling at up to 40km per hour while approaching a toll plaza.

The software can capture results in all light and weather conditions with up to 97% accuracy, according to a blog post by Nvidia. Tapway developed VehicleTrack with Nvidia GPUs and software.

According to Tapway, VehicleTrack was deployed on Plus highways to help automate payment for multi-class lanes. Previously, drivers have to stop at dedicated lanes to pay toll according to their vehicle types. Then toll booth operators also had to classify each vehicle and assign the appropriate toll rate. The task could be labour-intensive and time-consuming, leading to traffic congestion.

The issue also led to some drivers attempting to scam the system by exchanging cards or using different cards at entry and exit lanes on the highway to pay lower tolls.

VehicleTrack is claimed to be able to detect fraud cases by matching card IDs with license plates to determine the same card usage for both entry and exit lanes. According to Tapway, its software produces up to 99.4% accuracy for automatic number-plate recognition (ANPR) reading and up to 99% for vehicle classification accuracy.

Tapway founder and CEO Lim Chee How said in the Nvidia blog posting that using the company's technology allowed the VehicleTrack software to run more smoothly. For example, running on the Nvidia Triton Inference Server allowed the team to expand their software's capacity.

"We had some scaling problems doing inference and multithreading on our own and couldn't scale beyond 12 video streams in a server, but with Triton we easily handle 20 and we've tested it on up to 50 simultaneous streams," Lim said.

Plus has installed 577 cameras to date and will expand to nearly 900 cameras at 92 toll plazas. The company first engaged Tapway's services in 2019.

In an interview with a local portal back in January, Works Minister Datuk Seri Fadillah Yusof said highway concessionaires have been instructed to get ready to implement a multi-lane free flow system by 2025. The system will make way for a barrier-free tolling system as gantry structures are set to be fitted with ANPR technology.

He added that users will also be able to use any mode of electronic payment for highways with the system.