

The forensics of deadly traffic accidents

Each year, about 80 fatal and complex road accidents are referred to the Health Sciences Authority's (HSA) Forensic Chemistry and Physics Laboratory, which helps the Traffic Police in their investigations. Shabana Begum outlines how such accidents are re-created.

THE CASE

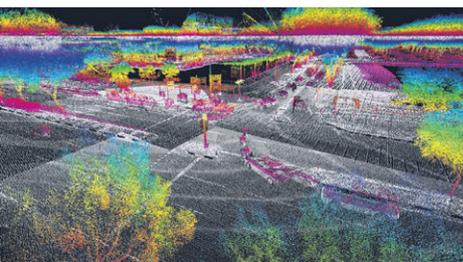
Motorcyclist killed in Ang Mo Kio accident

In March 2019, a car collided with a motorcycle at a junction in Ang Mo Kio. The motorcyclist died and the driver of the car was arrested. The HSA's traffic crash reconstruction team was called in to investigate.

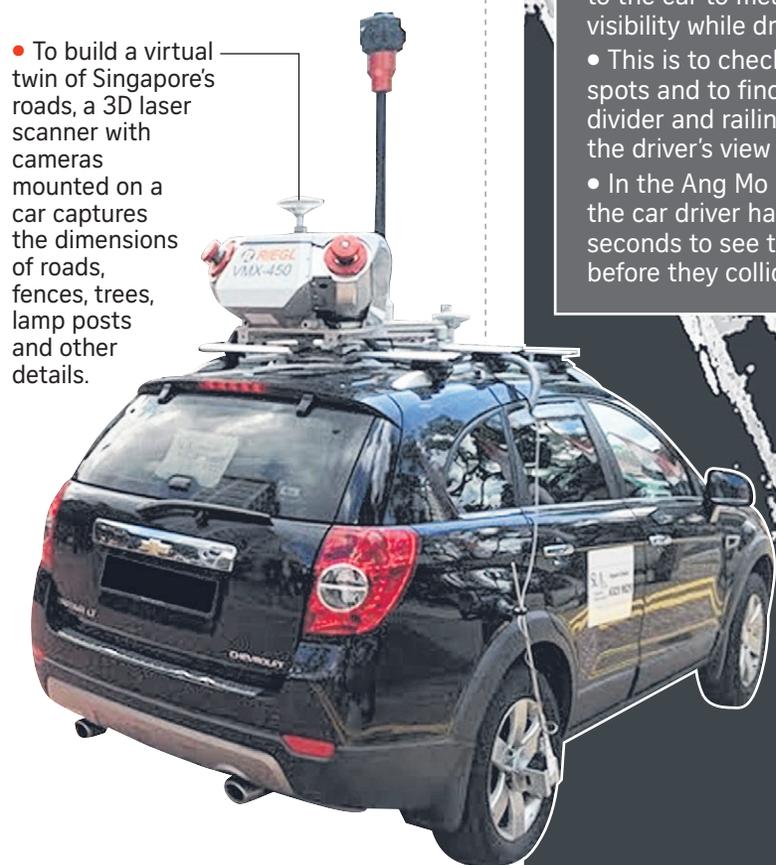
THE INVESTIGATION

Getting 3D map of the accident scene

- The 3D digital map is taken from the Singapore Land Authority's (SLA) National 3D Mapping Programme, which started in 2014.



- To build a virtual twin of Singapore's roads, a 3D laser scanner with cameras mounted on a car captures the dimensions of roads, fences, trees, lamp posts and other details.



Building a model to simulate the accident

- The simulation model is built using SLA's 3D map, footage from dash cams and traffic cameras, 3D scans of the impounded vehicles involved in the accident, and photographs of the accident scene, among other evidence.
- The model will comprise different angles, including the driver's and motorcyclist's perspectives, for the scientists to address investigative questions.



Dr Alaric Koh (left), acting division director of HSA's Forensic Science Division, and Ms Grace Wong, acting deputy laboratory director of HSA's Forensic Chemistry and Physics Laboratory, discussing a case.

Was the car driver able to see the motorcycle when he was turning at the junction?

- The driver may be taken back to the car to measure his line of visibility while driving.
- This is to check for blind spots and to find out if the road divider and railings had blocked the driver's view at any point.
- In the Ang Mo Kio accident, the car driver had at least 2.5 seconds to see the motorist before they collided.

Was the car or motorcycle speeding?

- The movements of the car and motorcycle leading up to the accident are reconstructed from CCTV or dash cam footage.
- If it took five seconds for the car to move from point A to point B*, the car's speed can be determined, after measuring the length between both points.

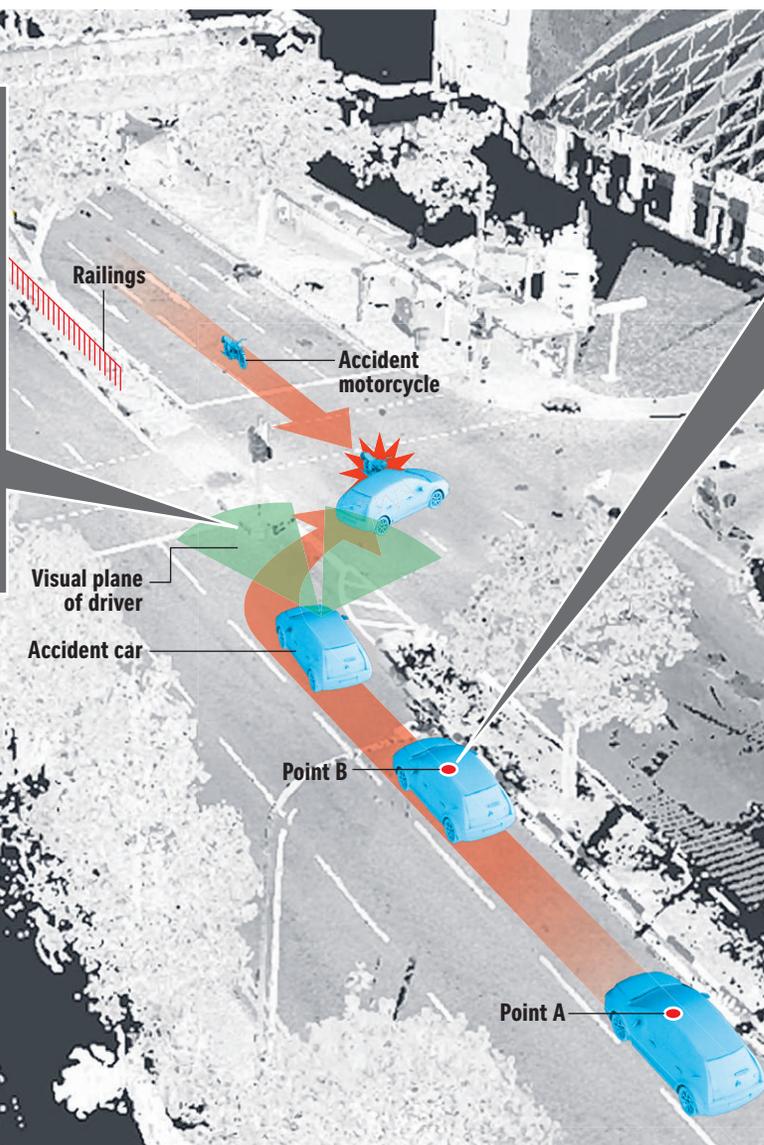
What can you tell from skid marks?

- Tire marks are usually caused by sudden braking.
- The marks show where and when the vehicle started decelerating and the speed of deceleration.



Accident reconstruction report submitted to court

- The reconstruction report is one of many sources used in court to come to a verdict.
- In the Ang Mo Kio accident, the car driver was eventually charged.



NOTE: *Points A and B are for illustration purposes.