

# NEWSLETTER

April 2025



## UNDER THE HOOD: TECHNOLOGY AND REGULATION OF SELF-DRIVING CARS

### Wielding rocks and knives, Arizonans attack self-driving cars

**CHANDLER, ARIZ.** - The smallest slip out of a park around noon one day in Gilbert, Arizona, is on his target, which was clear at a nearby intersection — a self-driving car operated by Waymo, the driverless-car company spun out of Google.

He carried out his attack with an unidentified sharp object, with slashing one of the tires. The suspect, identified as a white man in his 20s, then melted into the neighborhood on foot.

The slaying was one of nearly 100 attacks on driverless vehicles over the past two years in Chandler, an angry town where Waymo started testing long ago. It is a look at public anger over the use of artificial intelligence, with all kinds of hearing complaints about everything from safety to possible job losses.

Some people have pelted Waymo cars with rocks, according to police reports. They have repeatedly tried to run the vehicles off the road. One woman screamed at one of the vans, telling it to get out of her way.

has reported. A car pulled over the side of a road, with a driver's door open, was emptying inside. A car was pulled over the side of a road, with a driver's door open, was emptying inside. A car was pulled over the side of a road, with a driver's door open, was emptying inside.





Imagine it is the year 2030, and you have finally bought a self-driving car. However, while turning a sharp corner on the way home, the car fails to slow down enough to detect an innocent oncoming pedestrian and avoid hitting the curb. As a result, the car collides with the pedestrian, who fortunately suffers only a fright. However, this raises an important legal question: if a self-driving car injures someone, who is at fault? What do our current laws say about the possible future of self-driving car regulations?

Under Singapore's Road Traffic Act<sup>1</sup>, it is an offence to cause injury or death by driving recklessly or without due care. A human driver in this scenario would likely be guilty of one of these offences. However, our "driver" here is a robot, and criminal law only punishes humans (and sometimes companies)<sup>2</sup>. This makes sense, as a robot is not capable of making independent decisions.

# The Impact of the Self-Driving Car Industry On Tech Regulation

The case of *Quoine Pte Ltd v B2C2 Ltd*<sup>3</sup> offers insights into how liability might be assigned for autonomous systems. The Court of Appeal had the chance to observe how an automated platform's "knowledge" of a purported mistake during contract formation could be determined. The Court observed, among other things, that an automated platform has no "knowledge", thus the programmer's knowledge during programming, and his acquired knowledge and conduct before the contract are to be analysed. Extending this reasoning, to find criminal fault for self-driving car accidents, we have to identify a human who has acted "wrongly". This is logical—if everyone had acted "properly", nobody should be punished.

## CAR MANUFACTURER (HARDWARE)

The car manufacturer may be liable if he had knowingly sold a car that was unsafe ifor driving (he may also face legal action for contractual breaches or being negligent).

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## DEVELOPER OF THE SELF-DRIVING SYSTEM

The developer could be liable if a system error had caused the self-driving car to operate akin to a human driving recklessly or without due care. However, liability would likely depend on other factors, such as whether the error was foreseeable and preventable, and whether he took reasonable steps to ensure the safety and reliability of the system (he may also face legal action for contractual breaches or being negligent).

## APPLICATION AND CONCLUSION

In our case, the accident was likely caused by a system error. The system developer could be liable if he had failed to exercise proper care during development, as discussed above. However, holding developers responsible generally for every accident would likely be too harsh. It may also be impossible to prove due to the complex nature of machine learning algorithms. Implementing overly stringent regulation may also impede on further technological advancement due to fear of incurring liability. On this, this writer looks forward to development in case law and legislation for further guidance.



In conclusion, the introduction of new technologies such as self-driving cars challenges our understanding of the law and forces us to analyse the complexities of the new modern in creative ways. In analysing self-driving cars, we imagine a possible development of criminal law. Other technologies—such as generative artificial intelligence (“AI”)—may lead us to imagining possible futures of other aspects of law—such as intellectual property (“IP”). As technology evolves, the law must continue to adapt to the rapidly changing norms to ensure societal stability without hindering technological development.

*The content of this article represents the writer's opinion and does not constitute legal advice.*

References:

1. Road Traffic Act 1961, <https://sso.agc.gov.sg/Act/RTA1961>
2. Section 11 of the Penal Code 1871, <https://sso.agc.gov.sg/act/pc1871>
3. *Quoine Pte Ltd v B2C2 Ltd* [2020] SGCA(I) 02, [https://www.elitigation.sg/gd/s/2020\\_SGCAI\\_2](https://www.elitigation.sg/gd/s/2020_SGCAI_2)

Written by: Yap Jun Hong, Law & Tech Director

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## HUMAN DRIVER

Current self-driving cars require a human driver to take over the wheel when necessary. If the human driver did not take reasonable steps to prevent the accident, he may be liable (he may also face legal action for being negligent).



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## *Under the Hood:*

# Collision Avoidance in Robotaxis

If Grab launches robotaxis in Singapore, would you take it? Personally, I wouldn't be rushing to be the first few volunteers taking it. Here's why.

Firstly, I do believe that the powers of current technology can allow the car to achieve object detection and collision avoidance while in high-speed motion. This has been proven feasible by existing robotaxis using sensors such as LiDAR (Light Detection and Ranging), and plain old cameras to provide a 360-degree coverage around the car. This coverage replicates human sight and sound perception, with the aim of recognizing physical objects on the road and avoiding them. With the elimination of human reaction time, robotaxis can slam the brakes much faster and arrive at a halt much quicker than regular human driven cars.

That being said, a popular thought for robotaxis is how it may handle the trolley problem – when a young child suddenly appears in its path and there are elderly people aligned along the sides, will the robotaxi stick to its path and hit the young child, or swerve to the right and hit the elderly folk? Well, robotaxis simply choose to do none of the above. As its program is coded by a human for object avoidance, robotaxis are programmed to immediately brake to a stop if its sensors detect an object in its path.

Hence in a realistic setting, robotaxis aren't as unstoppable as depicted in trolley problems and will simply halt to avoid collisions.

However, prioritizing collision avoidance has created new problems for robotaxis in existing countries. On the road, drivers have feedbacked that robotaxis were road hogging and can often be stuck at pedestrian crossings, constantly giving way to others. While this does showcase the safety of robotaxis, its decision making still lacks far behind human drivers, often defaulting to the safest option of not moving/moving slowly.

While self-driving cars are not roadworthy yet, we still need to recognize their accomplishments of having 50% less collisions than human drivers, and the potential of costing 50% less than regular ride hailing services. This is due to eliminating the "error-prone" human (as the saying goes, "I'm only human"), allowing the company to improve the ratio of 1 human managing 1 car, to potentially 1 human managing 30 cars. Hence, I too am invested in the future of robotaxis and look forward to them completely replacing the human driver.

References:

1. <https://waymo.com/waymo-driver/>

2. <https://www.bloomberg.com/features/2023-self-driving-taxis-case-for-and-against/>

Written by: Daniel Tan Wei En, Tech Director

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## In Recent News...



### ***Proposal to let victims of online harms take tech platforms to court gets public support***

01

A proposal to let online harm victims to take tech platforms and perpetrators to court has received strong public support in Singapore. If passed, it aims to hold platforms accountable for failing to address reported online harms and to deter harmful behaviour by ensuring justice for victims.

However, there are worries that it might lead to too much content being censored, limit free speech, and cause unnecessary lawsuits. The government is working to balance these concerns with the proposal's objectives.

<https://www.straitstimes.com/singapore/proposal-to-allow-online-harms-victims-to-take-tech-platforms-to-court-get-public-support>

02

### ***LiDAR vs Camera Sensors***

Recently, YouTuber Mark Rober released a comparative analysis of 2 self-driving cars with distinctly different sensor systems: LiDAR vs Cameras.

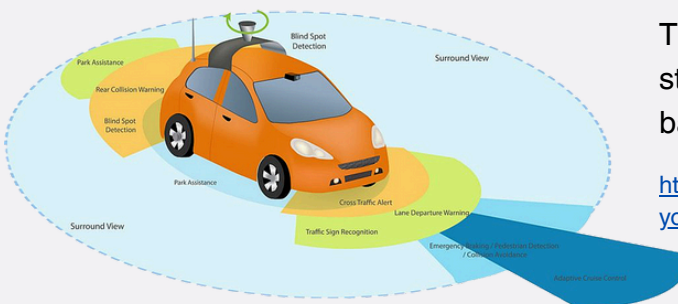
They tested the limits of object avoidance features by placing a mannequin under challenging conditions such as in fog, heavy rain, and behind a Loony Tunes style wall painted with a hyper-realistic depiction of the road behind it. In all 3 situations, the self-driving cars with LiDAR managed to stop in-time to not hit the mannequin, however the cars using cameras were unable to detect the “person” and did not break in time.



This was a direct comparison between Tesla self-driving (which relies on cameras) and a Lexus car (which relies on LiDAR). The results completely shook the internet especially since Tesla’s founder Elon Musk just mentioned 2 months earlier that humans rely on our eyes to drive, and rebuked LiDAR for being ridiculous in shooting lasers out of eyes. However, today's results show that human eyesight may be meant to receive support from lasers too, helping us detect objects more accurately and be safer on the road. China has also stepped in, banning Tesla from marketing their cars as “full self-driving”.

Throughout this fiasco, Tesla has not released a statement addressing concerns with their camera based self-driving.

<https://www.businessinsider.com/tesla-autopilot-vs-lidar-test-youtube-test-mark-rober-video-2025-3>



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