30 Days Series 12 by Zhang Kaihui

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AI GUIDES

AI & AUTOMATED VEHICLES

Automated vehicles (**AVs**), being vehicles which are capable of operation without complete reliance on a human controller, are becoming increasingly prevalent.

LEVELS OF AV AUTOMATION

Various forms of AVs have been in operation for decades. The horse is perhaps the earliest example of a partially autonomous mode of transport. In more recent times, cruise control, assisted parking and emergency braking are examples of automated features which shift some level of responsibility for control of a vehicle away from the human driver.

SAE International has developed five levels of driving automation (from Level 0 (no driving automation) to Level 5 (full driving automation)), which are becoming an industry recognised standard for driving automation.

AVs with Levels 4 to 5 of automation (higher driving automation to full driving automation) are being developed and released in some jurisdictions, posing new opportunities and new challenges across many different dimensions. While there are legitimate concerns about security, liability and job losses (as AVs may replace human workers in some commercial settings), AVs also have the potential to provide greater transport choices, reduce road congestion, boost productivity and increase safety. Additional benefits may also come from connecting AVs with other information sources (e.g. traffic data and parking data) and infrastructure (e.g. other vehicles and smart traffic control signals) in order to deliver further benefits.

Beyond day to day transport options, a multitude of applications exist for AVs. These include:

- use of AVs to conduct tasks that would be dangerous for a human driver, such as excavations at a dangerous mine site or to defuse a bomb;
- use of AVs to navigate inhospitable environments, such as outer space and the deep sea;
- integration of AVs into the supply chain to move goods within and between sites, or to manage mail and package delivery from distribution centres to consumers; and
- AVs that can undertake agricultural functions, such as planting, monitoring and harvesting crops.

ALLOCATION OF LIABILITY

The development, manufacture and operation of an AV will likely be a joint effort involving manufacturers, software developers, network operators and others (collectively, 'producers'). This may lead to confusion about how to allocate liability when something goes wrong with an AV system. For example, if an AV is involved in an incident and causes damage or injury, it may be difficult to determine the exact cause of the incident or to efficiently allocate liability.

Consider for instance a situation in which an AV crashes into a guardrail on a highway. At the time of the crash, the AV was in full driving automation but had issued a warning to its human driver about the upcoming obstacle. Who is at fault here? Should it be the driver for failing to take back control, the software developer responsible for deciding how the AV's automation systems should respond in different emergency scenarios, the authority responsible for designing the road and guardrail, or another party entirely (such as the driver of another vehicle that may have contributed to the accident)? These questions have profound implications for product liability, insurance and attribution of both civil and criminal responsibility.

POSSIBLE REGULATORY RESPONSES

There are a wide range of solutions that could help to address these issues. For example, the manufacturer of an AV could be held strictly liable for accidents caused by the AV while in full automation mode. Or owners could be charged a fee for registering an AV that would be used to provide Government-sponsored insurance coverage for accidents caused by the AV. Each possible option has its own particular benefits and drawbacks, and choosing between them requires difficult policy decisions to be made.

Different regulators around the world are at different stages of grappling with these issues. Australia's National Transport Commission has worked with Transport and Infrastructure Ministers and industry stakeholders to develop a regulatory framework for AVs in Australia, with an aim to develop a new Automated Vehicle Safety Law. This framework would require an entity to certify the safety of each automated driving system and the certifying entity would be subject to a general safety duty to ensure the safe operation of AVs using that system, for the design life of the system.

The European Union is a step ahead, introducing the Vehicle General Safety Regulation in July 2022 to establish a legal framework for the approval of AVs, including driverless cars.[1] The European Commission has also delivered technical rules for AVs and driverless vehicles. These are the first rules of their kind to prescribe testing procedures, cybersecurity requirements, data recording rules and safety performance monitoring for driverless vehicles.

In the UK, a report on automated vehicles was published early this year, outlining recommendations regarding the authorisation, monitoring and liability issues associated with driverless vehicles.[2] Key recommendations include the implementation of a self-driving test, two-stage approval process and a new safety assurance scheme. There were also recommendations to remove criminal liability for the person in the passenger seat of a driverless vehicle and to implement criminal liability on manufacturers and service operators for non-disclosure of safety information. In July this year, provisions relating to self-driving vehicles were implemented into the UK Highway Code, outlining the responsibility of the driver when an AV is in self-driving mode.[3] We expect regulators worldwide will continue to legislate to enable the safe implementation of AVs with higher levels of driving automation.

[1] See https://single-market-economy.ec.europa.eu/sectors/automotive-industry/vehicle-safety-and-automatedconnected-vehicles_en.
[2] See https://www.lawcom.gov.uk/project/automated-vehicles/.
[3] See https://www.gov.uk/guidance/the-highway-code/introduction.

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