Who Shares Legal Liability for Road Accidents Caused by Drivers Assisted by Artificial Intelligence Software?

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Research shows that over ninety per cent of road accidents are caused by human error. Artificial intelligence has been regarded as a potential solution to resolve road safety concerns. Recent accidents caused by drivers using Artificial Intelligence have posed new challenges to regulators in identifying legal liability. Conventional road safety regulations and laws respond mainly to human drivers' behaviours. This article focuses on the causality in car accidents and the nature of liability factors instead of the vehicle's automation level or the new functionality developed by the manufacturers. By developing a Hybrid Liability Assessment Tool to categorize and analyze the causes of accidents occurring when drivers use Artificial Intelligence assistance, this article explores the nature of the liability for such car accidents. This article concludes by making recommendations based on modifying the current road safety legal framework.

I Introduction

In 1950, Alan Turing proposed the Turing Test as a replacement for the question "Can machines think"[1]). Since then, Turing's ideas have been widely discussed, attacked, and defended. At one extreme, Turing's paper has been considered to represent the "beginning" of artificial intelligence and the Turing Test has been considered as its ultimate goal. At the other extreme, the Turing Test has been called useless, even harmful. In between are arguments on consciousness, behaviourism, the 'other minds' problem, operational definitions of intelligence, necessary and sufficient conditions for intelligence-granting, and so on[2].

Traditional Artificial Intelligence (AI) has included major components of rule-based reasoning, case-based reasoning and machine learning. These were distinguished from other less cognitive but more numerically based techniques such as operations research and statistics. Lodder and Zeleznikow argued that Artificial Intelligence involves the study of automated human intelligence, including practical tasks of building computer systems to perform intelligent tasks and conducting research on how to represent knowledge in a computer comprehensible form.[3] Machine learning is that subsection of learning in which the artificial intelligence system attempts to learn automatically.[4]

Recently, Artificial Intelligence (AI) has been used to assist drivers of vehicles to better and more easily perform their tasks. Whilst engaging in driving on the road, the AI software makes independent decisions based on the process of machine learning and algorithmic analysis of

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[1] Alan Turing, 'Computing Machinery and Intelligence' (1950) 59(236) *Mind* 433.

[2] A P Saygin, I Cicekli and V Akman, V., 2000. Turing test: 50 years later' (2000) 10(4) *Minds and machines* 463.

[3] Lodder, A.R. and John Zeleznikow, 'Developing an online dispute resolution environment: Dialogue tools and negotiation support systems in a three-step model' (2005) 10 *Harvard Negotiation Law Review* 287.

[4] Lodder, A.R. and John Zeleznikow, *Enhanced dispute resolution through the use of information technology*. (Cambridge University Press, 2010).

the data collected by all external sensors.[5] As over 90% of the road accidents are caused by human errors, the rapid development of AI to support driving in the last decade certainly brings confidence to the community and the expectation that the human driver will be greatly supported by if not replaced by AI in the near future.

Such driving also poses new challenges to the road safety and legal professions.[6] Since motor vehicles replaced horse and carriage more than a century ago, the task of driving has relied mainly on human intelligence. Driving on the road is ultimately a process of decision-making based on the information collected through communication between the human driver and the external environment.[7]

When uncertainties resulting from the human driver's emotion and reaction to the environment outside the vehicles affects the decision-making process, accidents can occur. The current road safety regulatory framework is designed exclusively with respect to human drivers.[8] Therefore, concerns over the use of AI to support driving is rising, as currently no consistent legal framework has been provided to address the risks that such driving might bring.

This article seeks to explore the legal implications of the challenges raised by the use of AI for driving and to propose appropriate suggestions for reform. Part II of this article further clarifies the challenges that AI is bringing to road safety. Part III provides a comprehensive analysis of the liability factors in car accidents caused by drivers aided by AI. Through the analysis of several motor accidents, an Hybrid Liability Assessment Tool (*HLAT*) model is established to categorise the liability factors in car accidents based on causalities. Part IV subsequently illustrates the legal reform Australia has made so far to address the liability issue to prepare for the implementation of using AI to support driving on public roads. Two further suggestions are made consequently to minimise the potential risks brought by such driving. Part V summarises the essential aspects in understanding what these emerging technologies such as using AI to support driving may bring to our lives and how we may react to such challenges.

II Identifying Causalities in using AI to support Driving: Confusion, Ambiguity, Imperfection and Disruption

A Confusion: Using AI to support driving and the Automation Level of Vehicles

The decision-making processes that result in car accidents involving vehicles operated by drivers aided by AI and their causalities are quite often neglected. Instead, the automation levels of vehicles have always been central to the discussion.

The automation level of a vehicle is generally referred to as SAE J3016, a standard provided by the Society of Automotive Engineers International ('SAE International'), a global group that develops engineering standards. SAE J3016 focuses on various detailed features to categorise vehicles with different automation levels. It also defines drivers' obligations. Since it was firstly introduced in 2014, it has been a 'living document' that is subject to ongoing evolution, as

[5] Ungern-Sternberg, A et al, *Research Handbook on the Law of Artificial Intelligence* (Edward Elgar Publishing Ltd, 2019) 255.

[6] Keri Grieman, 'Hard Drive Crash: An Examination of Liability for Self-Driving Vehicles' (2018) 9 (3) *Journal of Intellectual Property, Information Technology and Electronic Commerce Law* 294.

[7] Ruth Kannai, Uri Schild and John Zeleznikow, 'Modeling the Evolution of Legal Discretion. An Artificial Intelligence Approach' (2007) 20 (4) *Ratio Juris* 530, 532.

[8] Ungern-Sternberg, above n 5, 258.

described by SAE Marketing Communications Director.[9] There have been various interpretations of this 'standard' depending on when the standard was introduced. Understandably, confusion may occur from time to time, as people refer to a 'standard' with same name (SAE J3016) but in different versions.

Table 1.1: Levels adopted from SAE International Standard J3016[10]

Level and Automation Level	Description
Level 0 – No Substantive Driver Assistance	Level 0 vehicles are entirely controlled by a human driver.
Level 1 – Driver Assistance	Level 1 vehicles have some supportive automated features such as cruise control and lane centring. The human driver must drive the vehicle whenever these supportive features are engaged.
Level 2 – Partial Automation	Level 2 vehicles have more supportive features (than level 1 vehicles) to assist driving. The human driver must drive the vehicle whenever these supportive features are engaged.
Level 3 – Conditional Automation	Level 3 vehicles can be driven by automated driving features. The human driver must take over driving when the feature requests. The automated driving features can only drive under limited conditions.
Level 4 – High Automation	Level 4 vehicles can be driven by automated driving features and not require a human driver to take over the driving. The automated driving features can only drive under limited conditions.
Level 5 – Full Automation	Level 5 vehicles require no human input during the driving under all conditions.

In SAE J3016, vehicles are ranged from level 0 – 5. Level 0, 1 and 2 each have specific features but they can be considered as a single category named 'What does the Human in the Driver's Seat Have to Do?'.[11] Similarly, levels 3-5 can be considered as a single category with a description of 'you are not driving when these automated driving features are engaged – even if you are seated in the driver's seat'. Level 3 specifies that a human driver is a necessary condition. To avoid the misunderstanding SAE J3016, examples are included, which are evolving. Nevertheless, the uncertainty and ambiguity in such a standard does not provide much assurance in identifying causalities in accidents where the driver is aided by AI.

The ongoing debate on the Tesla AI driving function (a combination of software including autopilot, autosteer etc) offers an example of such confusion. In May 2016, a Tesla Model S crashed into a white truck when the car was in 'autopilot' mode. In the same year, Tesla announced that its Model S would be 'fully self-driving'. A vehicle that is 'self-driving' as defined by SAE J3016 is ranked from level 3 upwards. Nevertheless, later investigation by the National Highway Traffic Safety Administration ('NHTSA') confirmed the vehicle in the

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[9] Jennifer Shuttleworth, *SAE Standards News: J3016 Automated-Driving Graphic Update*, SAE International (7 January 2019) < https://www.sae.org/news/2019/01/sae-updates-j3016-automated-driving-graphic>.

[10] Society of Automotive Engineers International 2018, *SAE J3016 Levels of Driving Automation,* <https://www.sae.org/binaries/content/gallery/cm/articles/press-releases/2018/12/j3016-levels-of-automation-image.png>.

[11] Ibid.

accident was at 'level 2' automation. In the SAE Government/Industry Meeting 2018, this case was discussed with an emphasis on the automation level of this vehicle and analysis of all elements involved in the accident based on level 2 automation features. In the meeting, reference was made to the Tesla Model S Owner's Manual, which states that it is the driver's responsibility to '…be prepared to take corrective action at all times', a requirement of both level 2 and level 3 vehicles set out in an earlier version of SAE J3016.[12]

As stated by SAE International, the SAE J3016 is a continuously evolving standard, and so debating whether Tesla Model S involved in the accident was wrongly categorised might be unnecessary. Nevertheless, the inconsistency and ambiguity between the Tesla commercial advertisement and the accident investigation report jeopardizes public trust and confidence in a technology that could be hugely beneficial in the long term.[13]

B Ambiguity: Only Blame Whoever was in the Driver's Seat

Human error contributes to road accidents in various ways, including dangerous driving, careless driving, driving with excessive use of drugs or alcohol, or driver fatigue.[14] By contrast, AI performs the task of assisting driving by unconditionally obeying traffic laws and regulations provided by data algorithms.[15] AI assisted driving should be warmly welcomed by the broader community because it helps reduce the number of accidents. However, a survey conducted in 2017 showed that 78% of participants expressed safety concerns about travelling in a vehicle that is not controlled by a human driver.[16] Table 1.1 lists a few accidents involving accidents caused through the use of AI since 2016. Public concerns can perhaps be more easily understood by specifying the fatalities and the ambiguity of liability identification in each accident.

Table 1.2: Recent Accidents Involving a Vehicle Engaging in AI Driving

Date	Location	Accident	Consequence	Malfunction and Liability
20/01/2016	Hebei, China	Tesla crashed into a road cleaning truck	Driver's death	Malfunction: unclear; Liability: 'Driver's inattention and overreliance'
07/05/2016	Florida	Tesla smashed into a white truck and sheared off the top of the car	Driver's death	Malfunction: unclear; Liability: 'Driver's inattention and overreliance'
20/03/2018	Arizona	A modified Volvo (by	Pedestrian death	Malfunction: unclear;

[12] Harold Herrera, *Special Investigation of a Fatal Crash Involving a Vehicle with Level 2 Automation*, SAE Government Industry Meeting (24-26 January 2018) < https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/sae2018hherrera.pdf>.

[13] Jack Stilgoe, 'Machine Learning, Social Learning and the Governance of Self-Driving Cars' (2018) 48 (1) *Social Studies of Science* 25, 26.

[14] Almar Kumar Moolayil, 'The Modern Trolley Problem: Ethical and Economically-Sound Liability Scheme for Autonomous Vehicles' (2018) 9 *Case Western Reserve Journal of Law, Technology and the Internet* 1, 32.

[15] Ungern-Sternberg, above n 5, 257.

[16] Detroit Free Press Staff, *Poll Reveals Fear of Travel in Self-Driving Cars*, USA Today (9 March 2017) <https://www.usatoday.com/story/money/cars/2017/03/08/poll-reveals-fear-travel-self-driving-cars/98881656/>.

		Uber) hit the pedestrian		Liability: Operator's liability
23/03/2018	California	Tesla crashed into highway barrier	Driver seriously injured then died	Malfunction: unclear; Liability: 'Driver's inattention and overreliance'
24/02/2019	Florida	Tesla lost control, crashed	Driver's death	unclear to the public
29/04/2019	Kanagawa, Japan	Tesla crashed into a van and motorcycles	Two deaths	Malfunction: unclear; Liability: 'Driver's inattention and overreliance'
01/03/2019	Florida	Tesla smashed into a white truck and sheared off the top of the car	Driver's death	Malfunction: unclear; Liability: 'Driver's inattention and overreliance'
03/06/2020	Taiwan	Tesla crashed into a white overturned cargo	Car crashed no death	Malfunction: unclear; Liability: 'Driver's inattention and overreliance'

Seven of the eight cases mentioned in table 1.1 resulted in fatalities. Investigations were conducted to identify the appropriate liability in each of these accidents. Due to the failure to detect the malfunction of the AV system, after these accidents, the manufacturers and operators of the vehicles began to claim that their driving system was not capable of self-driving and that human attention was needed at all time during the operation of the vehicle. The liability therefore was ultimately incurred by whomever occupied the driver's seat.[17] This completely contradicted what was promoted earlier in advertising about the vehicles.[18] Investigations into these accidents did not provide much progress in defining liability in those car accidents that occurred when using AI driving. Moreover, inconsistency in the statements made by Tesla and Uber after the accidents created more ambiguity, making the identification of liability in such accidents difficult.

Many of the above accidents were dealt with in varying ways depending on the local culture.[19] The first fatal accident in the above table occurred in China. Although the driver had been killed while he was aided by AI, the driver's family's request for an investigation was rejected by the dealer. The dealer also denied that the vehicle was in an AI driving mode (autopilot) at the time of the accident, even though further investigation and evidence suggested otherwise. Nevertheless, when the family brought the case to the Court, they only asked for an amount of approximately USD$1,400, not as a compensation for the driver's death but as a warning to

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[17] Tania Leiman (2020): *Law and Tech Collide: Foreseeability, Reasonableness and Advanced Driver Assistance Systems*, Policy and Society, DOI: 10.1080/14494035.2020.1787696.

[18] Andrew J. Hawkins, *No, Elon, the Navigate on Autopilot Feature is not 'Full Self-Driving*, The Verge (30 January 2019) <https://www.theverge.com/2019/1/30/18204427/tesla-autopilot-elon-musk-full-self-driving-confusion>.

[19] Goltz, Nachshon, John Zeleznikow, and Tracey Dowdeswell, 'From the Tree of Knowledge and the Golem of Prague to Kosher Autonomous Cars: The Ethics of Artificial Intelligence Through Jewish Eyes.' (2020) 9.1 *Oxford Journal of Law and Religion* 132, 134.

deter other Tesla fans from over-relying on misleading information provided in promotion of the AI auto-driving feature.[20]

C Imperfection: Tesla AI-Driving Crashing into Cargo/Truck/Road Barrier

In each of the six accidents in table 1.2 that occurred when the vehicle crashed into cargo/truck/road barrier which caused a fatality, AI was involved in the driving task (which Tesla refers to as 'autopilot'). The driver's immediate death caused some difficulty in determining who was responsible for making the decision that resulted in the accident. Consideration of the decision-making process was neglected. Instead, the investigation focused on peripheral aspects including 'operation domains' for low-level automated vehicles, 'surrogate means' of determining driver's engagement in such a vehicle, event data, safety metrics, 'connected vehicle technology' and 'vehicle-to-vehicle requirements'.[21] Whether a malfunction in the underlying software contributed to a faulty decision-making process was never clearly addressed. Repeated emphasis on the requirements for full driver attention and the denial of the possibility for fully automated AI driving, meant that the issue of liability in cases was almost never clarified, but was always shifted to the human driver, blaming inattention and an overreliance on the AI.[22]

LiDAR measures distances by illuminating the target with laser light and measures the reflection with a sensor. Performing driving using AI involves machine learning and algorithms that analyse data collected through LiDAR camera, laser, radar, GPS and many other sensing components which provide advice and, in some circumstances, make decisions in reaction to different driving situations. The eliciting of meaningful information from the data has been a long-time concern that may have a heavy impact on AI behaviour.[23] Research found that AI promotes concerns with image recognition, even though the use of AI in driving is more productive than in other AI application areas.[24] The observation of the accidents in table 1.2 shows that AI image recognition is not only imperfect, but the malfunction of the recognition processes involved can be random, regardless of the colour or the size or the movement status of the target on the road. How the use of AI led to the wrong decision, or at which stage it failed to obtain and process the data vital for decision-making remains unclear. All the investigations also failed to explain whether there was any issue in programming the AI software. A media report in 2019 briefly mentioned that Tesla changed the software programming task from a third-party company to its in-house team after the 2016 Florida accident. Nevertheless, the accident in March 2019 revealed that after three years, the issue that caused that driver's death remained unsolved.[25]

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[20] Jack Spring and Alexandria Sage, *Tesla Removes 'Self-Driving' from China Website after Beijing Crash*, REUTERS (15 August 2016) < https://www.reuters.com/article/us-tesla-china-crash-idUSKCN10Q0L4>.

[21] National Transportation Safety Board, *Accident Report*, NTSB/HAR-17/02 PB2017-102600 (7th May 2016) < https://dms.ntsb.gov/public/59500-59999/59989/609449.pdf >.

[22] Faiz Siddiqui, *Tesla Sued by Family of Apple Engineer Killed in Autopilot Crash* (2 May 2019) The Washington Post

<https://www.washingtonpost.com/technology/2019/05/01/tesla-sued-by-family-man-killed-autopilot-crash/>.

[23] Andrew Stranieri and John Zeleznikow, *Knowledge Discovery from Legal Databases* (Springer Science and Business Media, 2006).

[24] Ungern-Sternberg, above n 5, 259.

[25] Timothy B. Lee, *Autopilot was Active When a Tesla Crashed into a Truck, Killing Driver* (17 May 2019) Arstechnica

<https://arstechnica.com/cars/2019/05/feds-autopilot-was-active-during-deadly-march-tesla-crash/#:~:text=It%20was%20the%20combination%20of,crash%2C%22%20the%20NTSB%20reports>.

D Disruption: a case of the use of AI by an Uber Driver Caused a Pedestrian Death

Table 1.2 includes the fatal accident arising from the use of AI in Arizona in 2018.[26] A Volvo SUV modified by Uber hit a pedestrian, causing injuries and death.[27] This fatal accident resulted in Uber's suspension of the AI driving testing program in Arizona and California. The National Transportation Safety Board ('NTSB') provided an in-depth analysis of the accident by assessing multiple factual aspects of the collision including vehicle factors, Uber Advanced Technologies Group ('ATG') Developmental Automated Driving System, Volvo Advanced Driver Assistance Systems, company operations, post-crash changes and human factors.[28] Distributing the focus to many different parties and introducing new terms such as 'inadequate safety culture' did not simplify the complexities of this case.[29]

In this particular case, the pedestrian, dressed in dark colours, was pushing a bicycle across a four-lane road, at night. The pedestrian was walking outside the designated pedestrian crosswalk. The car failed to stop before hitting the pedestrian. The car was totally controlled by the AI assisted driving software (a proprietary developmental automated driving system).[30] There was an operator in the car, but she was not watching the road before the collision. A complete investigation conducted by the NTSB addressed all possible issues without clarifying how the AI system failed to avoid the collision. Nevertheless, the operator in the car was considered ultimately liable for the accident, as Uber provided a testing policy and required the operator of the vehicle to intervene in time to prevent the collision during the driving process.[31] Liability in the car accident caused by inappropriate use of the AI software was again overlooked. The pedestrian's contributory negligence in this case was considered during the investigation but was not emphasized as important to future research.

III Liability Analysis in Road Accidents

Challenges arise and ongoing debates start when liability issues concerning the use of AI to assist driving are considered.[32] Numerous researchers have provided various advice on how to identify liability based on their own understanding of the application of technology represented by AI assisted driving.[33] Many regulators and legal practitioners still believe that the liability caused by AI assisted driving cannot be regulated under the current legal

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[26] National Transportation Safety Board, *Preliminary Reports Released for Crash Involving Pedestrian, Uber Technologies, Inc., Test Vehicle* (24 May 2018) <https://www.ntsb.gov/news/press-releases/Pages/NR20180524.aspx>.

[27] Wikipedia, *Death of Elaine Herzberg* (June 2018) <https://en.wikipedia.org/wiki/Death_of_Elaine_Herzberg>.

[28] National Transport Safety Board, above n 18, 5-34.

[29] National Transport Safety Board, *Inadequate Safety Culture' Contributed to Uber Automated Test Vehicle Crash – NSTB Call for Federal Review Process for Automated Vehicle Testing on Public Roads* (19 November 2019) <https://www.ntsb.gov/news/press-releases/Pages/NR20191119c.aspx>.

[30] National Transport Safety Board, *Highway Accident Report – Collision between Vehicle Controlled by Developmental Automated Driving System and Pedestrian Tempe Arizona* (18 March 2018) <https://www.ntsb.gov/investigations/AccidentReports/Reports/HAR1903.pdf>.

[31] Carolyn Said, *Exclusive: Tempe Police Chief Says Early Probe Shows No Fault by Uber*, San Francisco Chronicle (26 March 2018) <https://www.sfchronicle.com/business/article/Exclusive-Tempe-police-chief-says-early-probe-12765481.php>.

[32] Alexander F. Beale, 'Who's Coffers Spill When Autonomous Cars Kill – A New Tort Theory for the Computer Code Road' (2018) 27 (2) Widener Commonwealth Law Review 215, 216.

[33] Roger Kemp, 'Autonomous Vehicles – Who will be Liable for Accidents?' (2018) 15 (33) *Digital Evidence and Electronic Signature Law Review* 35-45.

framework,[34] with some even arguing that a new legal framework must be created for this purpose.[35]

In this section, the *HLAT* model is developed to assist in the identification of liability in road accidents, regardless of who or what makes the decisions in a driving task. Key elements of liability, as well as how it is regulated under the current Australian legal framework, will be clarified through the analysis of causalities in an accident caused by human-intelligence driving.

The *HLAT* model is then applied to AI assisted driving to examine whether liability issues can be identified. For illustrative purposes, the analysis will first refer to a car accident that occurred in the State of Victoria and the subsequent Court judgement under Victorian jurisdiction,[36] as road safety is predominantly regulated by States and Territories. As public use of AI assisted driving is not legal under the current road safety scheme in Australia except for testing purposes,[37] the subsequent analysis of AI driving will refer to foreign accidents.

A Causalities in Car Accidents Caused by Human Drivers

In the early morning of 26 November 2012, a Mercedes was travelling through a red light at the intersection of Victoria Street and Rathdowne Street, Carlton, Victoria. Australia and collided with another vehicle that was travelling through the intersection with a green light. The speed limit on Victoria Street was 60 kph. The Mercedes driver was driving at a speed of approximately 127 kph. The Mercedes spun out of control for about 115 metres before colliding with a tree in the median strip. Both cars were partially damaged. Both drivers suffered no injuries but the passenger in the Mercedes, Liam Zaicz, was severely injured. The investigation subsequently found that the driver, Phoenix Harrison had a blood alcohol concentration 'more than three and a half times the legal limit'.[38] Moreover, at the time of the offending, Harrison's driver's licence had been suspended.[39]

The first step in establishing the elements that contribute to liability in this case is the identification of the relevant facts:

a. The Mercedes driver was driving after excessive alcohol consumption;
b. The Mercedes driver exceeded the relevant speed limit by 67 kph before the collision;
c. The Mercedes driver travelled through a red light;
d. The Mercedes driver was driving while his licence was suspended.
e. The Mercedes collided with another car;
f. The other driver was driving through the traffic light in accordance with road safety standards;
g. The weather conditions were normal; and
h. There was a tree in the median strip.

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[34] Antonio Davola, 'A Model for Tort Liability in a World of Driverless Cars: Establishing a Framework for the Upcoming Technology' (2018) 54 (3) *Idaho Law Review* 591, 612.

[35] Kenneth S. Abraham, Robert L. Rabin, 'Automated Vehicles and Manufacturer Responsibility for Accident: A New Legal Regime for a New Era' (2019) 105 (1) *Virginia Law Review* 127, 129.

[36] *Harrison v The Queen* [2015] VSCA 349.

[37] VicRoads, *Automated Driving System (ADS) Permit Scheme* (28 September 2018), <https://www.vicroads.vic.gov.au/safety-and-road-rules/vehicle-safety/automated-and-connected-vehicles/testing-of-automated-vehicles>.

[38] [2015] VSCA 349, 18.

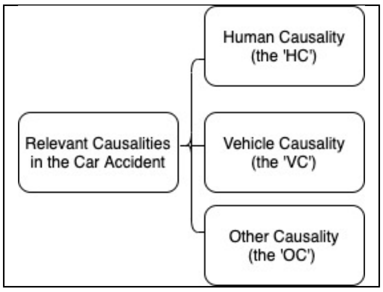
[39] Ibid, 22.

The 1968 Vienna Convention on Road Traffic (the '*Convention*') provides drivers' obligations with respect to road safety.[40] Australia is not a participant to the Vienna Convention, but the theoretical basis provided in the *Convention* is still an essential source for regulating road safety in Australia.[41] As defined by the *Convention*, the human driver is responsible for the vehicle operation[42] while the vehicle has to meet the relevant safety standards.[43] The elements extracted from the points, therefore, can be divided into the following three categories:

1) any causality between human operator and the accident will be defined as Human Causality ('*HC*');
2) any causality that relates to the defectiveness of the vehicle, such as faulty components or system failure, is defined as Vehicle Causality ('*VC*'); and
3) any other causality that is neither HC nor VC is defined as Other Causality ('*OC*').

An initial *HLAT* model as shown in diagram 1.1 is established, presenting these potential liability factors within the context of '*HC*', '*VC*' and '*OC*'.

Diagram 1.1: The *HLAT*



By applying the *HLAT* to the case scenario in this section, the relevant facts can be clearly categorised as provided in Diagram 1.2. Facts (a), (b), (c), (d) (e) and (f) are reflective of the human drivers' operation, therefore recognised as *HC*. Facts (g) and (h) concern external elements of weather conditions and road conditions respectively and, as neither of them is directly related to the operator or the vehicle, they are specified as *OC*. Through the investigation, there was no *VC* involved in this accident.

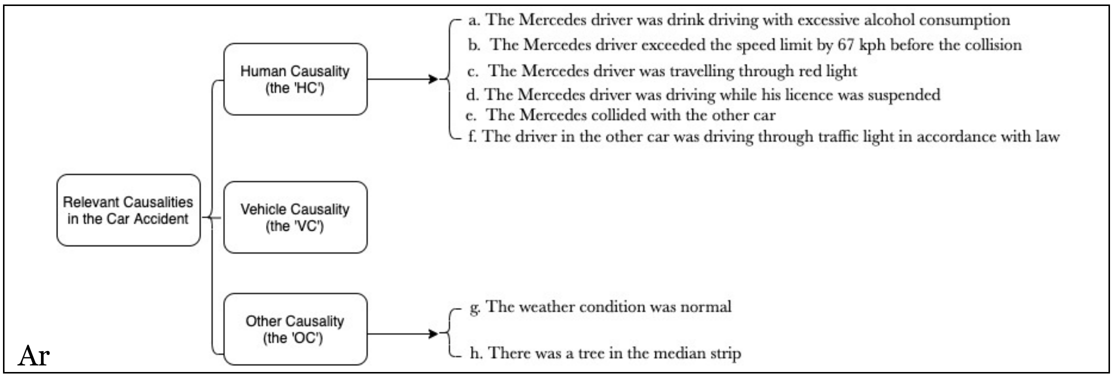
[40] *Convention on Road Traffic*, concluded 8 November 1968, 1042 UNTS 11 (entered into force 21 May 1977), art 8.

[41] National Transport Commission, *Regulatory Options for Automated Vehicles: ANNEX' National Transport Commission* (10 May 2016) <https://www.ntc.gov.au/current-projects/preparing-for-more-automated-road-and-rail-vehicles/>.

[42] *Convention on Road Traffic*, concluded 8 November 1968, 1042 UNTS 11 (entered into force 21 May 1977), arts 8(1), 8(4), 8(4), 8(5).

[43] Ibid art 38(1), 38(2).

Diagram 1.2: Applying *HLAT* to Causalities in Human Driving Accident



To illustrate explicitly how each causality is regulated under the current road safety regulations, the following section examines each fact provided in diagram 1.2 in turn.

B The Regulatory Analysis of the Liability Concerning Causalities

In Victoria, multiple agencies are involved in dealing with a car accident. The Traffic Accident Commission ('TAC') pays statutory benefits to compensate personal injuries on a non-fault basis.[44] Where there is criminal conduct alleged, the investigation and prosecution is conducted by the Victoria Police.[45] Car insurance providers play a critical role concerning property damage, when the vehicle is covered. If there are faulty components of the vehicle contributing to the accident, the owners of the vehicles need to seek independent legal advice to recover damages from the car manufacturers. Other factors, such as contributory negligence from other road users, are assessed under the law of torts.

The *Road Safety Act 1986* (Vic) ('*RSA*') is the dominant legislation in Victoria in relation to traffic management and regulation. The aim of the *RSA* is to provide 'safe, efficient and equitable road use'.[46] Road users' obligations are illustrated in detail in s 17A of the *RSA*.[47] The road user is required to drive in a safe manner and to consider fully all relevant factors such as road conditions, weather conditions, level of visibility, traffic conditions, road signs, vehicle condition, as well as the road user's own physical and mental condition.[48] The road user also owes a duty of care to the safety and welfare of other road users, as well as to the road and off-road infrastructure.[49] Section 106 of the *Road Management Act 2004* (Vic) provides a specification of matters that may be considered as contributory negligence in relation to a claim that may be raised when dealing with a car accident.[50] Whether these facts are taken into account as contributory negligence is assessed further under s 26 of the *Wrongs Act 1958* (Vic).[51] Most of the *HC* in diagram 1.2 will first be assessed under s 1 (ab) and s 17A. Both drivers are road users in the case scenario. They both have the above obligations as well as a duty of care under the *RSA*. In this case, the Mercedes driver's conduct of hitting other vehicles and endangering other road users' safety clearly breaches his legal obligations.[52] The other

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44 *Transport Accident Act 1986* (Vic).

45 Victoria Police, *Major Collision Investigation Unit (MCIU)* <https://www.police.vic.gov.au/specialist-areas-0>.

46 *Road Safety Act 1986* (Vic) s 1.

47 Ibid s 17A.

48 Ibid s 17A (1) (2A).

49 Ibid s 17A (3).

50 *Road Management Act 2004* (Vic) s 106.

51 *Wrongs Act 1958* (Vic) s 26.

52 *Road Safety Act 1986* (Vic) s 1.

driver was driving in accordance with the road safety regulations thus no contributory negligence can be claimed in this case.

Part 5 of the *RSA* sets out the provisions relating to offences involving alcohol or other drugs.[53] Section 49 of the *RSA* provides that a person is found to be guilty of an offence involving alcohol or drugs if he or she is operating a motor vehicle 'under the influence of intoxicating liquor or any drug to such an extent as to be incapable of having proper control of the motor vehicle'.[54] This is an offence under the *Transport (Compliance and Miscellaneous) Act 1983* (Vic).[55] The Mercedes driver in this accident was found to be driving under the influence of alcohol and clearly endangered the road safety.

'Excessive speed infringement' is dealt with under s 28 (1)(a) of the *RSA*, defined as a driving speed that reaches 130 kph or of over 25 kph in excess of the permitted speed.[56] Speeding is also an offence against the *Transport (Compliance and Miscellaneous) Act 1983* (Vic).[57] Part 6 of the *RSA* further explains these offences and legal proceedings. Section 64 of the *RSA* provides a definition of 'dangerous driving' and its prohibition of a person from driving a motor vehicle 'at a speed or in a manner that is dangerous to the public' of relevance in this situation.[58] Section 65 of the *RSA* may also be taken into consideration as an alternative to s 64,[59] depending on further examination of the driver's intentions, as well as assessing any other offence. In the above accident, the Mercedes driver was driving at a speed of 127 kph while the road speed limit was 60 kph. This conduct clearly satisfies the requirements set out within the legal definition of 'an excessive speed infringement', triggering a breach defined in s 64 or s 65 of the *RSA*. An offence of this kind is held as a liable causality in a car accident.[60]

In this case, there was no *VC* as there was no malfunction of the vehicle at the time when the accident occurred. In a case where *VC* resulted in road accident and caused injury or property damage, a claim can be made against the car manufacturer under the statutes of torts as well. The strict liability attached to the car manufacturer under the Australian Consumer Law is also relevant.[61] There are two factors under the *OC* category in diagram 1.2. One concerns road conditions, while the other concerns weather conditions. Section 17A (1) (2A) of the *RSA* specifies that it is the road user's obligation to be aware fully of the external environment when fulfilling the driving task.[62] Therefore, these two factors are not considerations of concerns in the accident.

The above regulatory analysis of the liability factors in this accident is illustrated in Diagram 1.3:

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[53] *Road Safety Act 1986* (Vic) Pt 5.

[54] Ibid s 49.

[55] *Transport (Compliance and Miscellaneous) Act 1983* (Vic) s 86.

[56] *Road Safety Act 1986* (Vic) s 28 (1) (i) (ii).

[57] *Transport (Compliance and Miscellaneous) Act 1983* (Vic) s 221U definitions.

[58] *Road Safety Act 1986* (Vic) s 64 (1).

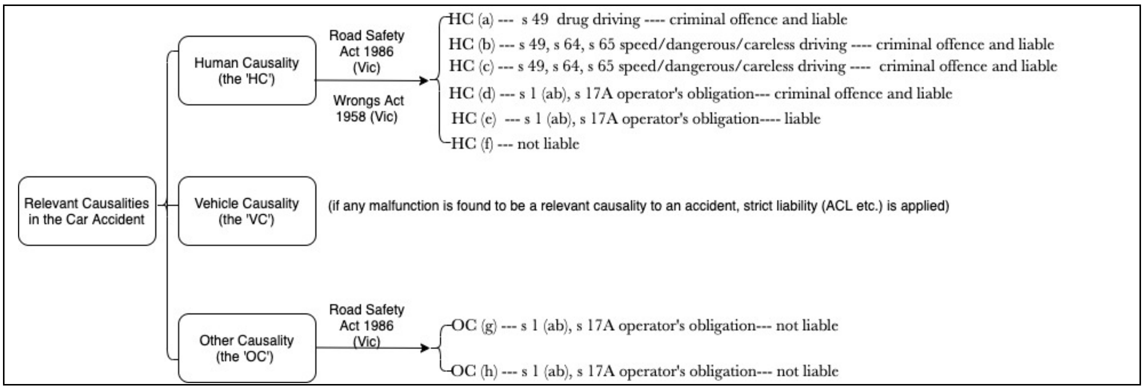
[59] *Road Safety Act 1986* (Vic) s 65 careless driving.

[60] *Ajay Sharma v R (2017)* VSCA 63.

[61] Harold Luntz et al, *Torts Cases and Commentary* (LexisNexis, 7th ed, 2013) 391.

[62] *Road Safety Act 1986* (Vic) s 17A (1) (2A).

Diagram 1.3: Subsequent Regulatory Analysis



As the car required full human control, the liability factors are readily identified and regulated. Which driving decisions can be made without human input and whether the current regulatory framework is sufficient to assess and allocate the liability has become a challenge in the era of AI assisted driving. The following section applies the *HLAT* model to two accidents caused by AI assisted driving to examine whether the liability factors in each case can be identified.

C Applying HLAT to Car Accidents Caused by AI Assisted Driving: Uber Accident 2015

On 25 May 2018, in Arizona, an Uber in AI assisted driving mode hit a pedestrian during testing. This incident caused injuries and death.[63] The case was settled without disclosure of the details concerning liability. This fatal accident resulted in Uber's suspension of its testing programme in Arizona and California and generated public panic around the uncertainties that may be brought by AI assisted driving. So as to resolve this complexity, the *HLAT* model will be applied to this accident to examine whether liability can still be clearly addressed based on causalities.

Uber Accident in Arizona 2018: Relevant Facts

a. The AI assisted driving Uber hit the pedestrian.
b. The pedestrian was pushing a bicycle across a four-lane road.
c. The pedestrian was walking outside the designated pedestrian crosswalk.
d. The Uber was operating in self-drive mode.
e. The human operator was required to intervene in time during the testing to prevent the collision in accordance with Uber's internal policy.
f. The human operator was not watching the road before the collision (road camera evidence).
g. The Uber was traveling at a speed of 56 kph while the speed limit was 72 kph.
h. The AI assisted driving system failed to brake before hitting the pedestrian.
i. The vehicle sensor did not sense the pedestrian.
j. The collision occurred late in the evening; and
k. The pedestrian was dressed in dark clothing.

[63] National Transportation Safety Board, *Preliminary Reports Released for Crash Involving Pedestrian, Uber Technologies, Inc., Test Vehicle* (24 May 2018) <https://www.ntsb.gov/news/press-releases/Pages/NR20180524.aspx>.

Diagram 1.4 categorises the causalities liable for the accident by applying *HLAT* modelling to the above accident facts.

Diagram 1.4: Applying *HLAT* to Causalities in AI Driving Accident

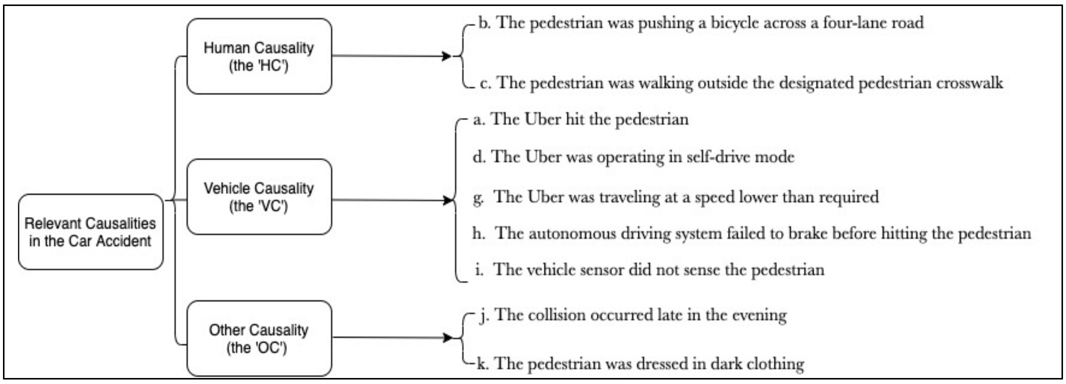


Diagram 1.4 provides the categorised relevant causalities in an accident caused by AI assisted driving. Compared to diagram 1.2, the major liability factors have shifted from the *HC* to the *VC*. Assuming the above accident was to occur in Australia, under the application of the regulations, fact (a), (d), (g), (h) and (i) can be assessed under strict liability and the manufacturers will be responsible if the vehicle is found defective, including the driving system and any component involved in the AI assisted driving task. Facts (b) and (c) are likely to be considered as liable causalities due to the evident contributory negligence in this accident. Factors (j) and (k) are both external conditions and not directly related to the operator or the vehicle. How these two facts contribute to the accident with the car in AI assisted driving mode depends on the communication between the vehicle and the external environment.

Due to the uncertainties brought by advanced technology, regulators may be easily distracted from the nature of the accident itself and focus on technical details, such as on each of the separate components involved in an AI assisted driving task.[64] What differentiates diagram 1.2 from diagram 1.4 is only the proportion of liability allocated under the *HC* and the *VC*. Nevertheless, the nature of the accident as well as the key liability categories remain the same. Even though in this accident the Uber operator in the vehicle was held liable for the accident as a result of the company policy specifically requiring human intervention to prevent collision, consideration was also given to the pedestrian's contributory negligence. The relevant causalities are factual and well identified using *HLAT*.

IV AI Assisted Driving in Australia: Readiness and Suggestions

In Australia, even though there is no clear timeframe within which to deploy higher level AI assisted driving vehicles for public use. much effort has been made to create a consistent legal framework as well as improve the public confidence and trustworthiness of adopting emerging technologies such as AI assisted driving into community life. The current focus is on initiating legal reform, improving national infrastructure, and developing a new insurance framework. This section summarises progress made and makes proposals for future research and development ('R&D').

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[64] Kemp, above n 31, 34.

A Readiness: A Collaboration between State and Federal Government

In Australia, the federal government is responsible for setting the standards for new vehicles.[65] State governments, on the other hand, are responsible for road safety as well as other matters relating to drivers, vehicle operation, licensing and registration.[66] In committing itself to a global mission of leveraging the advanced automated technology to improve the 'safety, efficiency and sustainability' of the transport system, the Australian government started the *Austroads Connected and Automated Vehicle Trial Programs* in 2016.[67]

To ensure the safety of road use when it comes to AI assisted driving, the federal government works closely with the state and territory governments to monitor the progress of each of the programmes. Options for the legislative regulation of automated vehicles in Australia have been discussed and critically reviewed since 2016.[68] The *National Transport Commission ('NTC') Analysis of Legislation in Australia* assessed 716 specific provisions from two conventions, 32 acts and 21 regulations relevant to automated vehicles.[69] As over ninety-five per cent of these provisions deal with human drivers' road behaviour, the barriers to applying these laws to AI assisted driving are obvious.[70] The NTC has provided policy guidelines to address aspects of safety assurance, motor accident insurance, driving law reform, and data accessibility and security.[71]

To facilitate the AI assisted driving trial programme, each of the participating states and territories passed legislation to issue individual trial permits to exempt the permit holder from current road safety laws.[72] The legislation complies with the key elements of the NTC guidelines regarding trial management, insurance coverage, safety management plans, and the collection of trial data.[73] However, of all states and territories to have participated in the AI assisted driving trial programme, the State of Victoria is the only one that mandates safety management plans as part of the application for a trial permit. As challenges to road safety are the main focus of this article, for illustrative purposes, the following analysis will therefore refer to regulatory reform and development in the State of Victoria.

There are currently six active trial programmes participating in the 'Connected and Automated Vehicles Trials' in Victoria. An Automated Driving System ('*ADS*') permit scheme was designed and implemented in the state regulatory framework[74] after referring to a Code of Practice based on the UK Code for testing vehicles that are capable of engaging in AI assisted

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[65] National Transport Commission, *Guidelines for Trials of Automated Vehicles in Australia* (24 May 2017) <https://www.ntc.gov.au/sites/default/files/assets/files/AV_trial_guidelines.pdf>.

[66] Ibid.

[67] Australian Trade and Investment Commission *Australian Trials and Policy Developments* <https://www.austrade.gov.au/future-transport/connected-automated-vehicles/>.

[68] National Transport Commission, *Regulatory Options for Automated Vehicles: ANNEX* (10 May 2016) <https://www.ntc.gov.au/current-projects/preparing-for-more-automated-road-and-rail-vehicles/>.

[69] Ibid.

[70] Ibid.

[71] National Transport Commission, *Automated Vehicles* <https://www.ntc.gov.au/publication>.

[72] 'Permit holder' is referred to organisations that are undertaking trial programs to test AVs.

[73] Michael Swinson and Renae Lattey, *Driverless Vehicle Trial Legislation – State-by-State*, King&Wood Mallesons (28 February 2018) <https://www.kwm.com/en/au/knowledge/insights/driverless-vehicle-trial-legislation-nsw-vic-sa-20180227>.

[74] VicRoads, *Automated Driving System (ADS) Permit Scheme* (28 September 2018) <https://www.vicroads.vic.gov.au/safety-and-road-rules/vehicle-safety/automated-and-connected-vehicles/testing-of-automated-vehicles>.

driving.[75] The scheme covers vehicles capable of performing a dynamic driving task defined under the *RSA*.[76] Section 3AB of the *RSA* provides that the holder of an ADS permit that is in force is driving an automated vehicle specified by that permit when it is operating in AI assisted driving mode.[77] The permit holder may be an individual or a corporation which is responsible for the actions of the vehicle in the same way as a human driver is liable.[78] All road users have an obligation under s 17A of the *RSA* to drive a vehicle or use the road in a safe manner with regard to all the relevant factors.[79] If a traffic offence is committed when the vehicle is in AI assisted driving mode, the permit holder is liable for the infringement.[80]

Since 2016, great efforts have been made by both federal and state governments to react proactively to this challenge and to address the road safety issues that might possibly be brought by AI assisted driving. The upgrade of national traffic infrastructure, traffic law reform as well as expanding the insurance coverage have all been addressed in the government agenda. In line with those achievements as well as examining the liability factors specified in *HLAT*, two suggestions are subsequently made to minimise the risks and improve road safety when AI assisted driving is allowed on the public road.

B Suggestion One: Introducing New Importation Standards on Vehicles Capable of AI Assisted Driving

Currently, almost all major car manufacturers are developing AI assisted driving vehicles. Most companies including Waymo and Uber use a combination of LiDAR, radar and camera systems to input data and assist with processing the AI system.[81] Such components play key roles in assuring the accuracy of data collected from external environments before AI assisted driving system makes decisions to react. Currently, there is no strict standard pertaining to the production of these key components. Different vehicle manufacturers source software and hardware to perform AI assisted driving from a variety of suppliers.[82] Moreover, Tesla, one of the giant companies supplying AI assisted driving vehicles to the market, claimed that they would not use LiDAR, but use only cameras and radar to assist with its AI software.[83] Since the occurrence of a few fatal crashes in the US, the NHTSA has tended to strengthen data monitoring and requires up to thirty additional parameters to be recorded if the vehicle containing Event Data Recorders (EDRs) is to determine which component malfunctioned and caused the accident.[84] An approach like this is certainly beneficial in accident investigation for the R&D purpose, but nonetheless it is rather risky not to immediately and explicitly request an improvement of quality control in the production of those components and the software. Neither a global standard for manufacturing AI assisted driving vehicles nor a strict standard for modifying the vehicle components to fulfil the AI assisted driving task has

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[75] Centre for Connected and Autonomous Vehicles, *Code of Practice: Automated Vehicle Trialling* (6 February 2019) <https://www.gov.uk/government/publications/trialling-automated-vehicle-technologies-in-public/code-of-practice-automated-vehicle-trialling>.

[76] *Road Safety Act 1986* (Vic), s 3.

[77] *Road Safety Act 1986* (Vic) s 3AB.

[78] Ibid, s 3.

[79] Ibid, s 17A.

[80] Ibid, ss 33I and 33J.

[81] Nandita Sampath, *Proposal to Investigate Regulation and Standardization of Continuous Data Collection in Autonomous Vehicles (AVs) to Ameliorate the Incidence of AV Accidents, CSCRS Road Safety Fellow Report* < https://safetrec.berkeley.edu/sites/default/files/final_report_nandita_sampath.pdf>.

[82] Ibid.

[83] Matt Burns, *'Anyone Relying on LiDAR is Doomed,' Elon Musk Says*, TC (23 April 2019) <https://techcrunch.com/2019/04/22/anyone-relying-on-lidar-is-doomed-elon-musk-says/>.

[84] Sampath, above n 80.

been developed to date. Simply relying on legislative approaches to address technical issues in a legal dispute is increasingly difficult.[85]

In the case of the fatal accident where an Uber vehicle being driven in AI mode killed a pedestrian, the vehicle was a Volvo SUV that had been modified by Uber's own operating company - ATG, based on its own developmental technology.[86] The investigation looked into all causalities as well as the Volvo mechanical system and the modified automated driving system ('ADS'). No damage or defect in the Volvo mechanical system was found or in the vehicle's basic components including the braking, lighting and suspension.[87] The modification made by ATG to fulfil the self-driving task was examined closely as a result of the accident. ATG modified the vehicle by installing a proprietary developed ADS. The structural components, based on the report, included the LiDAR system, the radar, the camera, ADS computing and data storage unit, and a telecommunication system (GPS). In the case of the Arizona accident, the ADS was actively functioning at the time of the crash.[88] The question of which component in the ADS failed, thus causing the accident, remained unclear.

As there is no car manufacturer in Australia, all AI assisted driving vehicles will be imported. In Australia, the Department of Infrastructure, Transport, Regional Development and Communications is in charge of the importation of vehicles. The current policy allows companies, or even individuals (in rare cases) to import vehicles as long as the vehicle 'meets minimum safety standards that maintain the safest possible environment for all road users and the community'.[89] Highly automated vehicles can also be imported. An organisation that wishes to import highly automated vehicles may seek approval under the *Motor Vehicle Standards Regulation 1989* (Cth).[90]

The foreseeable complexities in assessing the technical parameters of future AI assisted driving vehicles of different models and brands creates a further challenge to regulators whenever there is an accident. Therefore, it is crucial that the government set more restricted standards when importing AI assisted driving vehicles. It is the car manufacturers' responsibility to have their AI assisted driving vehicles fully tested and to ensure the safety of their product before selling such automobiles in the Australian market. A comprehensive assessment report should be provided as one of the importation criteria, with full disclosure of the accidents where AI assisted driving units contributed to the accident regardless who was held liable. Australian consumers should be fully aware of the potential risks of vehicles that are capable of AI assisted driving and be more rational and prudent when they are driving such vehicles.

C Suggestion Two: Separating Lanes for AI Assisted Driving Vehicles and Other Road Users

In Australia, there are cases where a car accident occurred and no driver was negligent.[91] Drivers have obligations to ensure safety during driving; nevertheless, all other surrounding factors at the time of the accident must be taken into consideration as well. In many cases, more than one party has been found to be liable. When disputes arise, Courts may apportion the damages between parties depending on their road behaviour at the time of the accident. A

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[85] Uri J. Schild and John Zeleznikow, 'The Three Laws of Robotics Revisited' (2008) 4 (3/4) *Int. J. Intelligent Systems Technologies and Applications* 254, 255.

[86] National Transport Safety Board, above n 29.

[87] Ibid.

[88] Ibid.

[89] Department of Infrastructure, *Transport, Regional Development and Communications, Importing Vehicles into Australia* <https://www.infrastructure.gov.au/vehicles/imports/>.

[90] *Motor Vehicle Standards Regulation 1989* (Cth), regulation 11.

[91] *Sibley v Kais* [1967] HCA 43.

party that suffered loss and injury may also be found liable due to his/her own contributory negligence.[92] The offence of contributory negligence is assessed under State legislation. In the case of State of Victoria for instance, part 5 of the *Wrongs Act 1958* (Vic) sets out the details of the different circumstances in which contributory negligence should be assessed, and damages will be apportioned accordingly.[93] It is worth noting that the apportionment is determined not by legislation but by evaluating all relevant details. The involved parties need to seek independent legal advice if they believe more than one party is liable for the damage.

In the 2018 Uber fatal accident causing a pedestrian's death, the case was eventually settled without significant disclosure to the public. Despite the vehicle being in AI assisted driving mode and the finding that the operator was negligent as a result of not paying attention as required, the pedestrian was walking outside the designated pedestrian crosswalk. Nevertheless, Uber received a wave of criticism for breaching its duty of care and it subsequently suspended its testing programmes in multiple states. Regardless of whether the loss or injuries suffered can be covered by third-party insurance, it is vital to reduce the contributory negligence by reducing the disruptions by human road users.[94]

The current Australian legal framework lacks specificity in regard to the contributory negligence in an accident caused by AI assisted driving. Internationally, the legal implications of contributory negligence have been extended to regulate more highly automated vehicles. Section 6 (3) of the *Vehicle Technology and Aviation Bill 2017* (UK) provides that apportionment of the compensation will be affected if the injured party was negligent at the time of the accident and their associated conduct caused or contributed to the accident.[95] The Uber accident in Arizona 2018 and many other accidents caused by AI assisted driving set examples of how AI assisted driving can be disrupted by other road users' irrational road behaviour.[96]

Except for permitted testing programmes, AI driving without human input is prohibited in Australia. If the time will come when human input is not a necessary condition for driving, a separation of lanes should be considered when such vehicles are deployed on public roads. This will minimise the potential risks brought by the unpredictable disruption from other road users.

V Conclusion

The development of AI assisted driving could greatly improve road safety, as over ninety per cent of the road accidents are caused by human error. AI assisted driving eliminates errors such as drink-driving, drug-driving and fatigue. It is further expected that AI assisted driving will reduce congestion by managing the route more accurately, and improve social equity by using algorithms to offer more convenience to the aged and the disabled.[97] On the other hand, the uncertainties and difficulties in addressing the legal liabilities in regulating AI assisted driving present great challenges to regulators. If liabilities cannot be clearly identified, public confidence and trustworthiness in such AI applications will be greatly diminished.

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92 Trischa Mann, *Australian Law Dictionary* (Oxford University Press, 2nd ed, 2013), 182.

93 *Wrongs Act 1958* (Vic), part 5.

94 National Transport Commission, *Motor Accident Injury Insurance and Automated Vehicles* (October 2018) <https://www.ntc.gov.au/sites/default/files/assets/files/NTC%20Discussion%20Paper%20-%20Motor%20Accident%20Injury%20Insurance%20and%20Automated%20Vehicles.pdf> 31.

95 *Vehicle Technology and Aviation Bill 2017* (UK), s 6(3).

96 National Transport Safety Board, above n 21, 25.

97 John Zeleznikow, *Don't Fear Robo-Justice. Algorithms Could Help More People Access Legal Advice*, The Conversation (23 October 2017) <https://theconversation.com/dont-fear-robo-justice-algorithms-could-help-more-people-access-legal-advice-85395>.

This article has shown some of the complexities and difficulties in regulating emerging AI applications. The fact that it is such a rapidly evolving multidisciplinary area further compounds these complexities and difficulties.[98] The main focus in this article has been to identify the decision-making party ultimately responsible for a car accident when the driver is aided by AI.

We have proposed and established the *HLAT* model as a tool to identify and categorise causalities involved at the time of the accident. We have argued that the nature of liability in car accidents caused by AI assisted driving is no different from those caused by human drivers. Terms familiar to public discourse, such as road safety legislations, insurance framework, are still appropriate for use within the AI assisted driving context. Besides the possible malfunction of the AI assisted driving system, whether the surrounding environment is ready to cope with the AI driving task is also in question. Therefore, we have argued that more needs to be done to ensure road safety by making suggestions to improve the surrounding environment to cope with the dynamic evolution of the situation when the driving decision is not made by human driver, but by AI.

The *HLAT* model is not a complete solution towards ensuring road safety when AI assisted driving is deployed on the public road; rather, it is an analytical tool that can be used to simplify the complexities posed by such emerging technology as AI. No regulatory framework can be developed within a short time, due to the complex nature of the algorithms, machine learning, and deep learning, which are all core elements in AI applications. Moreover, it is still unclear whether AI can be regulated by our legal framework. Professor Lessig has argued that, unlike the constitutions, status and case laws that regulate the community, code regulates these emerging technologies.[99] Nevertheless, applying the *HLAT* assists the community to understand the causalities and liable parties in an accident where AI assisted driving is involved. An understanding of this kind is critical in reducing the community's fear about the uncertainties and lack of transparency that often accompany emerging technologies and ultimately enhances public confidence and trust.[100]

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[98] P. Casanovas et al, *AI Approaches to the Complexity of Legal Systems. Complex Systems, the Semantic Web, Ontologies, Argumentation, and Dialogue* (Springer-Verlag Berlin Heidelberg, 2010) 2.

[99] Lawrence Lessig, *Code Version 2.0* (Basic Books, 2006) 5.

[100] Steve Lockey, Nicole Gillespie and Caitlin Curtis, *Trust in Artificial Intelligence: Australian Insights*, The University of Queensland and KPMG Australia (October 2020) <doi.org/10.14264/b32f129>.