
LEGAL CHALLENGES IN REGULATING LIABILITY AND INSURANCE FRAMEWORKS FOR AUTONOMOUS VEHICLES IN INDIA

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Introduction

Artificial Intelligence (AI) was viewed as a myth about 5-6 years ago but currently we witness it to have revolutionized various sectors such as education, technology, banking, education etc. Moreover, it has found its way in to transportation, i.e. through advanced driver assistance systems (ADAS), autonomous mobility or self – driving and also into aerial drones. From autonomous vehicles to smart traffic management systems, Artificial Intelligence proves to be at the forefront in enhancing safety, efficiency and convenience in the mobility sector. With the amalgamation of enhanced capabilities of artificial intelligence systems, namely – machine learning, algorithms, computer vision, sensor fusion and data analytics it facilitates to create smarter, responsive and more adaptive transportation solutions. This concept stretches far beyond the traditional approaches, encompassing various modes of transport systems like trains, drones, ships and even space travel.

The building stone of Artificial Intelligence in the sector of mobility can be traced back decades ago with the invention of navigation systems and cruise control, with the help of GPS (Global Positioning System) and use of sensors, radars and Lidars. Over time, the advancements in technology of the sensors and radars paved way for more sophisticated applications of artificial intelligence in to the realm of mobility. Key players in the automotive industry, as well as tech giants are investing in large amounts in Artificial Intelligence to push forth the boundaries of possibilities in mobility, which is leading to trends like electric driver-less vehicles, Mobility as a Service (Maas) and vehicle-to-everything (V2X) communication. Companies like Google, through its Waymo project and Tesla pioneered the development of semi – autonomous and fully autonomous vehicles.

Along with wide varieties of applications and advancements, Artificial Intelligence systems also breed many threats as in the realm of data privacy and security. In order to cater to its full

functionality Artificial Intelligence systems need to collect and process large amount of data that in times can be sensitive in nature, with this emerges a huge requirement to regulate collection, processing and use of data in a considerate manner¹. Considerably, this study aims to provide a comprehensive analysis of the need and regulation of Artificial Intelligence in mobility while exploring the regulatory hurdles, liability issues and insurance models relevant in the Indian context.

Concept of AI and Autonomous Vehicles (AV)

Private sector appears to be the driver of AI innovation and integration of the same into autonomous mobility. However, government decisions will greatly influence the landscape of it. Therefore, we can witness the urge in government entities to contribute their willingness to regulate the use of AI in autonomous mobility to be in a streamlined way, as in, not posing to be troublesome for the private sector through harsh regulations but moving in a much unchallenging way by motivating them to do better while adhering to the established rules. Furthermore, countries around the world are formulating AI policies and strategies to secure a competitive edge by being the early adopters. The estimation of AI investments by the governments amounts to \$70 billion, as they strive to establish dominance in the sphere². Leading this race are China and United States. In 2021, the federal budget of United States for the particular fiscal year was estimated at \$1.5 billion towards non-defense AI research and development³. While, the director-general of Resource Allocation and Management Department of the Ministry of Science and Technology, China announced that Beijing would allocate 12 billion yuan (\$1.84billion) to nearly 40 major projects focusing on next-generation AI innovation.

While other major countries over the world are at the forefront of AV development and deployment, India is still in the nascent stages struggling to adopt these technologies. The pivotal reason to surround this delay would be the poor infrastructure that we witness, for instance, the poor road conditions, ill-logical traffic behaviour are some the factors that

¹ United Nations, Recommendations on AI Ethics, UN Doc SHS/BIO/REC-AIETHICS/2021 (2021) <<https://unesdoc.unesco.org/ark:/48223/pf0000380455>> accessed on 13 January 2025

² Asaro P., 'Autonomous Weapons and Ethics of Artificial Intelligence' (S. Matthew Liao ed., 1st edn. Oxford University Press, 2020) 15

³ Lewis, J. A., Lostri, E., & Cheng, C., 'AI Strategies and Autonomous Vehicles Development. Center for Strategic and International Studies', (2021) <<http://www.jstor.org/stable/resrep31137>> accessed 13 January 2025

contribute to the delay. Furthermore, looking deeper into the regulations we see The Motor Vehicles Act of 1988 still being in effect to govern road transport in India, mostly focusing on human drivers and looking away on the concept of driverless vehicles, thus creating a regulatory vacuum.

A significant regulatory concern arises with the integration of AI in vehicles as it forms the foundation of autonomous vehicle technology by enabling vehicles to perceive their environment, make decisions and navigate, however this technology of one lakhs, transparency and raises critical issues regarding accountability and liability in the event of an accident.

Liability in Autonomous Vehicle Accidents

The advent of autonomous vehicle makes a revolutionary milestone in transportation what brings fourth complex, legal and regulatory challenges, particularly regarding liability accidents. While traditional framework effectively address liability in human river vehicles, they fall short and apply to unique circumstances of AVs. As a result, AV manufacturers must be prepared for potential liability risk while individuals or properties are damaged by or within the context of autonomous vehicles⁴. The traditional approach of attributing responsibility over to driver must be changed as in case of AVs the accidents may result from various other factors such as hardware malfunctions, data issues, or software errors, which necessitates shifting liability to the developers of software, data providers or even the manufacturers. Therefore, a strong regulatory approach is required to protect legitimate interests of manufacturers or developers as well as the general public, which will not only help in keeping the innovation relevant in the industry but will also protect the consumers, thus catering to promote safety in check⁵.

Currently, the judicial approach towards this issue is still un-checked, for instance, in *Kaushnuma Begum*⁶ case, the court derives the same old traditional approach of strict liability that was liberated in *Rylands v. Fletcher*⁷, over a driver for an accident caused by bursting of the wheel of the driver's jeep. But, looking at it this approach it is certain to say that while a

⁴ Mrunali Khavale, 'The legal landscape of autonomous cycles: issues of liability', (Volume 2, Issue 7, International Journal for Legal research & Analysis, 2024) 10

⁵ Vatsal Tripathi, 'Advancing Autonomous Vehicle Regulations in India: A Comparative Analysis and Global Engineering Insights' (Volume 4, Issue 2, Indian Journal of Transport Engineering, 2024) 7

⁶ *Kaushnuma Begum and Ors v The New India Assurance Co. Ltd.* (2001), AIR 2001 SC 485.

⁷ *Rylands v. Fletcher*, (1868) LR 3 HL 330.

road accident is caused by an autonomous vehicle it will attribute the liability over to the driver, however, the Indian laws also clearly mention that if an accident occurs due to a defect in the product, then the liability should likely be that of a manufacturer. Thus, this speculation persists the need of introduction of new laws and procedures to be laid down for investigating liability in AVs, which helps for to build up defenses on the part the driver in a more nuanced manner rather than just catering to the defense of an act of god⁸.

Preparing for the Legal Shifts

With the implementation of new rules and regulations and loss, governing AV's and their liability in uncertain situations, it is clear that manufacturers will be at the forefront bearing the primary responsibility for any mishaps. Therefore, in order to protect their interests some grounds are to be considered for their defense. Liability is improbable to shine light over factors such as behaviour of the driver or weather conditions, rather is likely to focus on the technology itself. Considerably, there is higher chance of scrutiny over how companies develop and program the AI systems and the responses that they output, by the plaintiff. In such case, identifying the responsible parties and holding a single individual or an entity accountable will prove to be troublesome, producing various challenges such as, determining whether software or the hardware caused an incident, which further facilitates court to navigate their research over novel issues⁹. Therefore, in advent of such challenges the defenses that might prove to be permeable on the part of a defendant are discussed as follows:

1. User Misuse or Negligence

The manufacturer shall provide the guidelines regarding the use-case of his product to the end user in a proper format. In case of an accident, however, the same can be claimed as a defense proving failure on part of the user to follow the safety instructions, perform necessary maintenance checks or manipulating the systems inappropriately.

2. Third-Party Interference

The other means of defense could be proving the interference of a third - unauthorized party,

⁸ Kavya Krishnaswamy, 'A Comparative Reflection on the Product Liability Laws in India with the Rise of Autonomous Vehicles' (2022) 31 *Supremo Amicus*, 127

⁹ Mrunali Khavale, *supra* note 2 at 12.

such as a hacker or demonstrating the fault lies within the defective parts that were supplied by any supplier. Moreover, the failure in part of the authorities, if any, could also serve to be defense such as faulty traffic signals or inefficient display of required road signals, etc.

3. Risk Assumption

The driver or inducer must be adequately informed about potential risk in specific circumstances. for instance during snowfall, the AV should alert the driver to take manual control as adverse weather conditions can impair the vehicles autonomous driving capabilities. If the driver fails to act on such warnings, the failure could be recorded and used as a defense by manufacturer in any legal proceedings¹⁰.

4. Act of God

Ultimately, the manufacturer has the liberty to invoke the 'Act of God' defense by citing natural disasters, extreme weather conditions, and similar events as grounds for exemption from liability. However, to successfully use this defense, the manufacturer must first demonstrate that the system was entirely free from faults.

Conclusively, the above defenses are merely considerations that could be applied in India; however, it remains to be seen how the laws will evolve and create avenues for various defenses to be pleaded.

Insurance and Autonomous Vehicles: The Major Challenge

A third-party insurance is mandatory for any vehicle to roll over on India roads as mandated under the Motor Vehicles Act, 1988. This traditional frameworks places the driver or the vehicle owner under liability in case of any damages that any third-party might have suffered, covering bodily injuries, death or property damages. On the other hand, the insurance policy covers the damages incurred by the insured vehicle as well as personal injuries with the assumption that driver is in control of the vehicle. However, in the case of AV it will result in completely different manner as there is absence of a driver in control of the vehicle, thus, the liability tends to shift over from individuals to the software developers or the manufacturers. A calculated and well worked approach is necessary to include insurance framework in AVs.

¹⁰ ibid 13

The main challenge that pertains and is seeking exposure is that the vehicle alone needs to be recognized as an artificial person, only then the insurance frameworks can be modified accordingly.

Regulatory Authorities such as the Insurance Regulatory and Development Authority of India (IRDAI) and the Ministry of Road Transport and Highways (MoRTH) need to invest their time and money and focus on the challenges that pertain in providing an insurance framework to the AVs in India¹¹. The frameworks should focus on drafting specific guidelines for AV insurance, by providing dispute resolution mechanisms for AV-related claims through promotion of awareness among consumers regarding AV insurance policies and coverage.

The Global Perspective

As of today, adoption of Autonomous Vehicles as a mode of transportation is at the forefront of any country's agenda in the global sphere. Every country across the globe are in a rat race to achieve AI and autonomous mobility as soon as possible, whilst being a prosperous agenda it brings with it the need of regulations to keep the machine and human mind in check. Therefore, many countries have adopted various methods in order to be the first in successfully achieving goal with a rigid regulation.

The United States introduced the Federal Automated Vehicle Policy in 2016, providing guidelines for AV manufacturers on safety and compliance. Additionally, initiative, such as the AV TEST initiative, and the proving grounds program were launched under the ambit of AV START act. Although the act was not fully passed, it propose regulations for testing and established safety standards for AVs. Furthermore, state legislatures have been contributing to regulations regarding insurance and liability working in collaboration with National Highway Traffic Safety Administration¹².

German government established initiatives like the Digital Test Field Autobahn in order to promote controlled testing, by allowing AVs to operate without a human driver in certain specified conditions under the ambit of Autonomous Driving Act of 2021 in an attempt to address technology standards, liability and insurance. Ultimately, the regulations are

¹¹ James Anderson, *Autonomous Vehicle Technology : A Guide for Policymakers*, (2016) 145 < https://wiscav.org/wp-content/uploads/2017/03/RAND_RR443-2_Guide_Policymakers.pdf > accessed 19 January 2025.

¹² V.Ravi Kumar, 'Autonomous Vehicles in India : Evaluating the Need for Legislative Action' (2024) 7.

accordingly catered with European Union directives to ensure consistency across member states.

Japan's AV framework proves to be a step ahead in comparison, through their SIP program which initiates funds for R&D while supporting regulatory advancements. Moreover, controlled facilities are set up to allow tremendous testing for validating AVs on the Shin-Tomei Expressway, that is regulated through a concerned law called as the Safety of Highly Automated Vehicles Act 2017¹³.

The United Kingdom's approach on AVs speculates to be remarkable by the introduction of a single insurer model to handle AV related liabilities under the Automated and Electric Vehicles Act of 2018. Further, the act offers comprehensive guidance for AV testing on public roads and supports experimentation in controlled conditions¹⁴.

Dubai with its smart-city strategy aims for 25% of their transport to be autonomous by 2030, with the help of integrating test beds and regulatory sandboxes to help development of AV. Further, partnering with big-tech companies involved in AV manufacturing such as Tesla and Waymo have proven in technological advancements and finally moving towards the goal efficiently.

Adopting Best Practices

India in today's scenario has to be at par with other countries regarding regulation of Autonomous Vehicles for which there is an immediate need to adopt some of the practices that will prove to be helpful in driving the country towards its goal.

The first practice to be adopted is of a Comprehensive Legal Framework that clearly defines responsibilities among manufacturers, operators and software developers in case of an accident by enforcing a stringent data protection law that also safeguards personal data by establishing cybersecurity standards. Initiate a well-worked program to facilitate testing of AV and providing certification for the same.

India has to divert its funds towards developing Smart Infrastructure, by upgrading the roads

¹³ Mrunali Khavale, *supra* note 2.

¹⁴ Zhou J. 'AI Ethics: From Principles to Practice, AI & Society', (2023) 8.

with Vehicle-To-Everything (V2X) system for better communication with help of sensors for better navigation. Moreover, with abundance of population in vehicles on road, a dedicated lane could be established specifically for AVs in urban areas and developing a management system with integration of AI that could manage the traffic seamlessly.

The third practice that could prove to be beneficiary is promoting Public-Private Partnerships (PPPs), integrating the government for regulation, private companies for manufacturing and academic institutions for R&D would benefit in upgrading infrastructure. This could be achieved if the government provides incentives or tax benefits and grants for the private sector.

Ultimately, in order to effectively commute the above practices a Regulatory Body has to be set-up that exclusively focuses on AVs. The authority would be responsible for all the regulations, testing, certification and adjudication of issues that pertain with the practices adopted. Further, collaborating with international bodies will ensure effective implementation of AVs in the system.

Conclusion

Ultimately it is evidently clear that Artificial Intelligence is the future and so is its integration in each and every sector which also includes the transport sector, AI being integrated into vehicles serves as an advantage both in terms of safety and efficiency. With the future of transport leaning towards Autonomous Vehicles, their regulation is an evident task that has to be looked after, thus, many countries all over the globe are striving to strike a balance with promotion and regulation of AVs. With AVs proving to be better than humans in all sectors of transport, the fact that accidents may still happen is a fact that cannot be denied and while an accident occurs it produces the question of Who has to be held liable?. Therefore, the answer to this question seeks a well-formed framework of regulations and countries across the globe are struggling to find it, with many being ahead in answering it many others still strive. Similarly, another question that emerges is of insurance, as in who has to be insured - the man or the machine?.

India surely but slowly is on a quest to find answer to these questions, as is evident through the guidelines that are set forth for testing and certification of AVs by the Ministry of Road Transport and Highways in 2019, which includes safety standards, data protection measures, procedures for testing of AVs on public roads and reporting the outcomes. Moreover, state

legislatures like the State of Karnataka have played part by launching the Karnataka Innovation Authority Sandbox initiative for testing and R&D. India being in its early stages of regulating AVs proves to be remarkable whilst facing challenges in technical, legal and societal structures. Ultimately, a well thought out legislative framework can help in facing these challenges and shaping the landscape of transportation in India, by incorporating the best practices around the world and moulding the same to its very own requirements will tailor India's position as a leader in future of mobility.

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