



CyberPeace

White Paper on

**The Need for
Indigenous Regulation of
Artificial
Intelligence**

in India's Automotive Industry





Introduction

The Indian automotive industry has already started to have a considerable transformation, shifting from its in former times mechanical nature into a clever mobility ecosystem powered by data-automation and predictive decision forming. Tech featuring progressed driver assistance systems (ADAS) are no longer experimental tech, but have grown into more of the norm in modern transportation. India's ADAS market is anticipated to expand swiftly, with tier 2 ADAS adoption rising by 70.8 % in the first half of 2025¹. But, at the same time, India also recorded nearly 1.8 lakh road fatalities in 2024² and therefore as Nitin Gadkari noted 'Road safety has be turned into one of India's most serious governance problems.'³

Nearly all the AI systems incorporated into Indian vehicles are designed by datasets, expectations and standards assign under systematic Western or east Asian road circumstances. Roads in India operate

differently. The chaotic traffic mixture of two-wheelers, pedestrians, informal transport and herds of livestock paired with poor lane discipline, sporadic road markings and seasonal visual impairments produces a driving environment that foreign AI systems can seldom decipher. This discrepancy alters the AI from a safety instrument to a potential danger.

Three failures happen together: failure of governance, reliance by manufacturers on imported driving logic, and legal frameworks. The legal statutes and other persisting liability doctrines were worked on for human factors, not AI-assisted deciding systems. In comparison, EU Regulation (EU) 2024/1689 describes AI systems employed as safety components in vehicles as high risk systems needing mandatory conformity assessment and compliance obligations.⁴ India cannot afford to blindly accept and embrace Automotive AI by importing intelligence without also giving accountability.

¹JATO Dynamics, ADAS Adoption in India Reaches 8.3% in H1 2025 (Sept. 9, 2025), <https://www.jato.com/resources/news-and-insights/adas-adoption-in-india-reaches-8.3-in-h1-2025>

²"Ministry of Road Transport and Highways' Gov' of India Road Accident Fatality Data 2024, Maximum Ever in a Year, *Times of India*."

³"Ministry of Road Transport and Highways' Gov' of India Road Safety Statement by Union Minister Nitin Gadkari (Jan. 8, 2023), reported in [News on Aid](#).

⁴Article 6, Classification Rules for High-Risk AI Systems, EU AI Act, available at [Artificial Intelligence Act Database](#)."

⁵Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act), 2024 O.J. (L. 1689)."



HYPOTHESIS

India's current automotive and legal framework is inadequate to govern AI-enabled vehicles, as regulatory institutions, liability laws, and manufacturer safety practices remain unprepared for algorithmic decision-making for Indian roads.

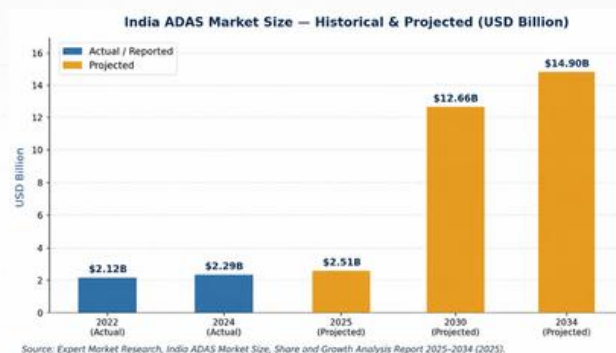


MARKET REALITY AND THE URGENCY FOR AUTOMOTIVE AI REGULATIONS IN INDIA

Growth of AI in India's Automotive Industry

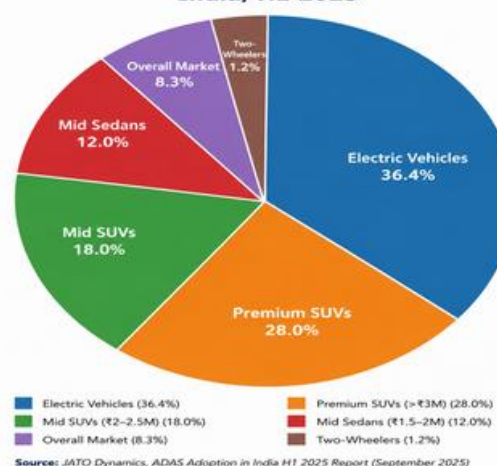
The reliance on artificial intelligence (AI) in vehicles has transitioned from being an optional feature for luxury vehicles to starting being a mandatory element for safety and functional functions in India's automobile market. ADAS, such as responsive cruise control, blind spot detection, collision warning and self-determining emergency braking (AEB), let's call them "Active Safety Systems" are also acquiring substantial momentum with commercial success in passenger cars and EVs. The India ADAS market was appreciated at around USD 2.29 billion in 2024 and is predicted to grow at a CAGR of 20.6% to nearly USD 14.90 billion by the year 2034⁶. OEMs now take ADAS as market-fighting benefit over luxury add-on, while EVs still drive shift towards futuristic transport systems. Thus, this obviously displays that AI bringing together is not experimental anymore but has begun to be turned into a central part of India's automotive segment.

⁶Expert Market Research, India ADAS Market Size, Share and Growth Analysis Report 2025–2034 (2025), <https://www.expmarketresearch.com/reports/india-adas-market>.



Electric vehicles lead ADAS adoption in India with a penetration rate of 36.4%,⁷ followed by premium SUVs at 28%, reflecting how safety automation is concentrated in higher-value segments. It indicates that EVs are the primary channel for AI-driven mobility integration in India and hence EV regulations should majorly focus on the interplay of EV and AI as both are the supposed new future.

ADAS Penetration Rate by Vehicle Segment — India, H1 2025



⁷IATO Dynamics, ADAS Adoption in India Reaches 8.3% in H1 2025 (Sept. 9, 2025), <https://www.iato.com/resources/news-and-insights/adas-adoption-in-india-reaches-8.3-in-h1-2025>



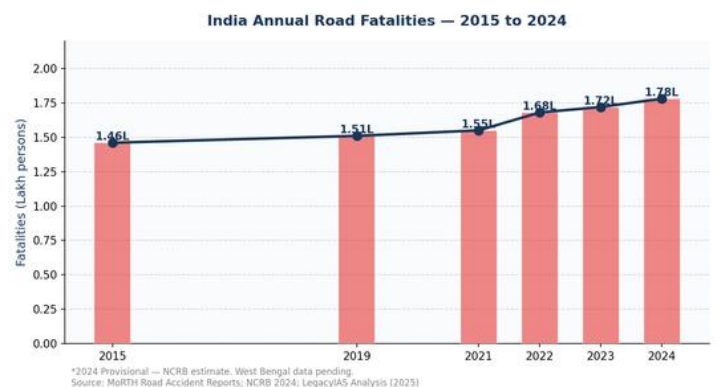
India's Safety Road Crisis

The unsettling state of road safety in India has created regulation of automotive AI a public policy vital rather than one based on technological choice. The Ministry Of Road Transport and Highways (MoRTH) reported that in 2024, India had approximately 473 lakh road accidents and almost 178 lakh fatalities on the roads which is one of the highest road fatality burdens worldwide's.⁸ India brings about around 11 % of road deaths worldwide but has less than 1 % of the planet's vehicles's.⁹ The Most accidents are resulted in by human error incorporating speeding, distracted moving and delayed reaction time. This strong justification is the basis for employing AI, facilitated safety systems such as automatic crisis braking (AEB), collision warning and monitoring of driver behaviour. But, if these systems are badly calibrated to the particular roads in India they will add to rather than decrease risk creating regulation a must.

⁸Ministry of Road Transport & Highways, Gov't of India, statement tabled in Lok Sabha, discussed in 1.77 lakh killed in Road Crashes in 2024; Maximum Ever in a Year, Times of India (Nov. 8, 2025). <https://timesofindia.in/indiatimes-in-india/1-77-lakk-killed-in-road-crashes-in-2024—maximum-ever-in-a-year/articleshow/12572633cm>.

⁹World Health Organization, Global Status Report on Road Safety (2023); see also Transport Research & Injury Prevention Centre, IIT Delhi, India Status Report on Road Safety (2024). <https://tripcc.iitd.ac/assets/publication/indiaStatuts/Report on Road Safety-2024.pdf>.

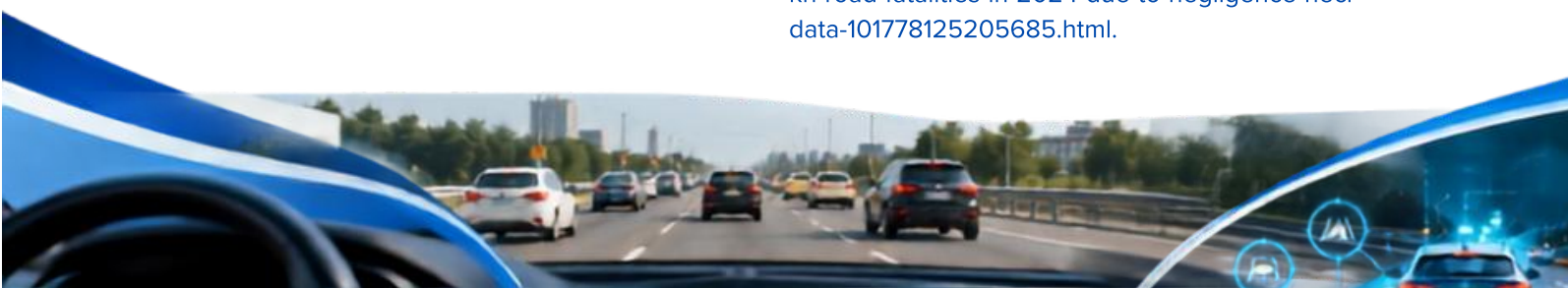
In 2024, the majority of road accidents in India were resulted in by speeding 61.2 % and emerged in over one lakh deaths. Two-wheelers and pedestrians accounted for nearly 63% of sum fatalities. Therefore, it may be concluded that the focus of manufacturers in automotive AI in India is mainly for dense mixed traffic scenarios instead of organized lane-based environments.¹⁰



Hyper Growth of High Risk AI-systems

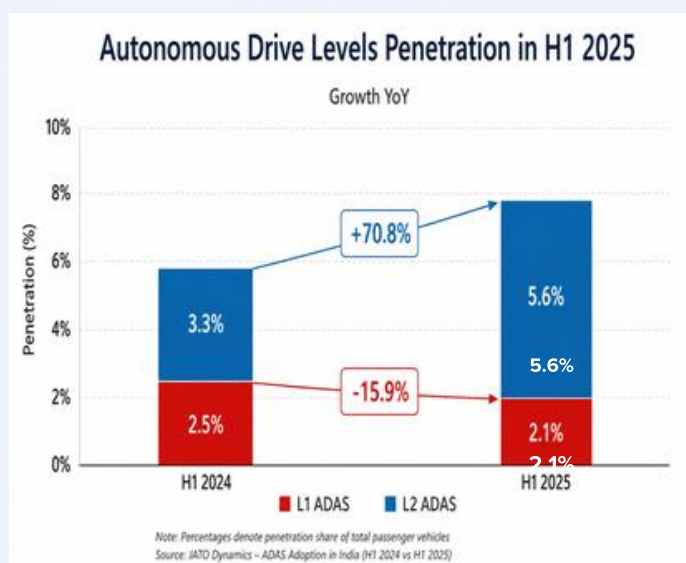
The AI, powered safety architecture is now incorporated across the Indian passenger automobile landscape with ADAS Level 2 features that ahead of time control the driving approach rather than simply supplying alerts to the driver. The number

¹⁰Nat'l Crime Records Bureau, Gov't of India, Accidental Deaths and Suicides in India 2024, discussed in 1,62 lakh Road Fatalities in 2024 Due to Negligence, Hindustan Times (May 14, 2026), <https://www.hindustantimes.com/india-news/162-lakh-road-fatalities-in-2024-due-to-negligence-necr-data-101778125205685.html>.





of ADAS penetration climbed from 6.2 % in H1 2024 to 8.3 % in H1 2025¹¹, with Level 2 systems rising by 70.8 %¹², embodying a 5.6 percent market share which shows that there is a higher risk system in trend but no indigenous measure to train such system.



Passenger vehicles encompassed 71.8 %¹³ of the ADAS market in 2025, with level-two self-determination encompassing 46.6 %¹⁴ of total deployments. Active Safety Systems are no longer confined to luxury segments and are increasingly present across mainstream vehicles (see Table 1).

¹¹ JATO Dynamics, ADAS Adoption in India Reaches 8.3% in H1 2025 (Sept. 9, 2025), <https://www.iato.com/resources-and-advancements/adas-adoption-in-india-reaches-8-3-im-h1-2025>

¹² ibid.

¹³ Mordor Intelligence, India Automotive Advanced Driver Assistance Systems Market Size & Share Analysis – Growth Trends and Forecast (2026–2031) (2026), <https://www.mordorintelligence.com/industry-report/s/india-automotive-advanced-driver-assistance-systems-market>

¹⁴ ibid.

Algorithmic-driven practical control is presently commercially integrated in India nevertheless there are no mandatory certification standards nor devoted liability rules governing high risk systems such as those symbolised by operating alone vehicles.

Regulatory Vacuum

The fast-tracked rollout of AI-based involved safety systems in India has greatly outpaced the development of legal and institutional safeguards. Functions like collision mitigation, lane treatment, driver monitoring and automatic braking are being incorporated into passenger vehicles. On the other hand, India does not have a mandatory certification regime to assess safety of these functions prior to freeing them in the market. The Automotive Industry Standard (AIS) framework mainly guides mechanical compliance and does not create a devoted approval architecture for algorithm-driven decision systems. Similarly, Bharat NCAP continues to focus mainly on passive crash survivability rather than assessing live independent involvement and software reliability.

The Ministry Of Electronics & IT's India AI governance guidelines¹⁵ acknowledge the requirement for risk-based regulation and sector-specific compliance but are non-binding as advisory documents. The general AI governance framework in India also continues with a 'light touch ' model, putting first innovation over mandatory accountability without any officially required mechanisms to need algorithmic audit trails, incidental reporting or blackness box auditing for AI-assisted accidents.¹⁶ This provides rise to a liability vacuum where the manufacturers can release high risk systems with no straightforward owner.

¹⁵ Ministry of Electronics and Information Technology, Government of India, IndiaAI Governance Guidelines(Nov. 2025).

¹⁶ Carnegie Endowment for International Peace, India's Advance on AI Regulation (Nov. 2024), <https://carnegieendowment.org/research/2024/11/in-dias-advance-on-ai-regulation>.





The Triple Failure

Government Failure

India's current angle to AI-governance in the automotive industry stays mainly advisory despite the high-risk nature of AI-assisted mobility. The India AI Governance guidelines published by The Ministry For Electronics & IT recommends sector-specific standards and institutional oversight via bodies such as BIS & TEC although it does not need mandatory certification, or imposition of lawfully required penalties'.¹⁷ But, unlike the EU under Regulation(2024/1689)¹⁸ categorizes automotive AI systems employed in braking steering collision avoidance etc., as "high-risk "needing pre-market conformity assessment logging obligations human oversight etc. India has even then to develop such guidelines. Even Bharat NCAP stays concentrated mainly on passive crash survivability rather than algorithmic reliability or self-governing intervention performance. The Parliamentary Standing Committee on Transportation¹⁹ has shown weaknesses in

¹⁷ Ministry of Electronics and Information Technology, Government of India, **IndiaAI Governance Guidelines (Nov. 2025)**

¹⁸ Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act), 2024 O.J. (L) 1689 1.

¹⁹ Department-Related Parliamentary Standing Committee on Transport, Tourism and Culture, Rajai Sabha, **Two Hundred Ninety-Fifth Report on**

the enforcement of standards for vehicle safety and shortage of tailored oversight for arising automotive tech. Further, NITI Aayog observes²⁰ that Indian mobility systems stay dependent upon imported AI architectures insufficiently trained for India's mixed-traffic road circumstances especially two-wheeler informal transport poor lane punishment.

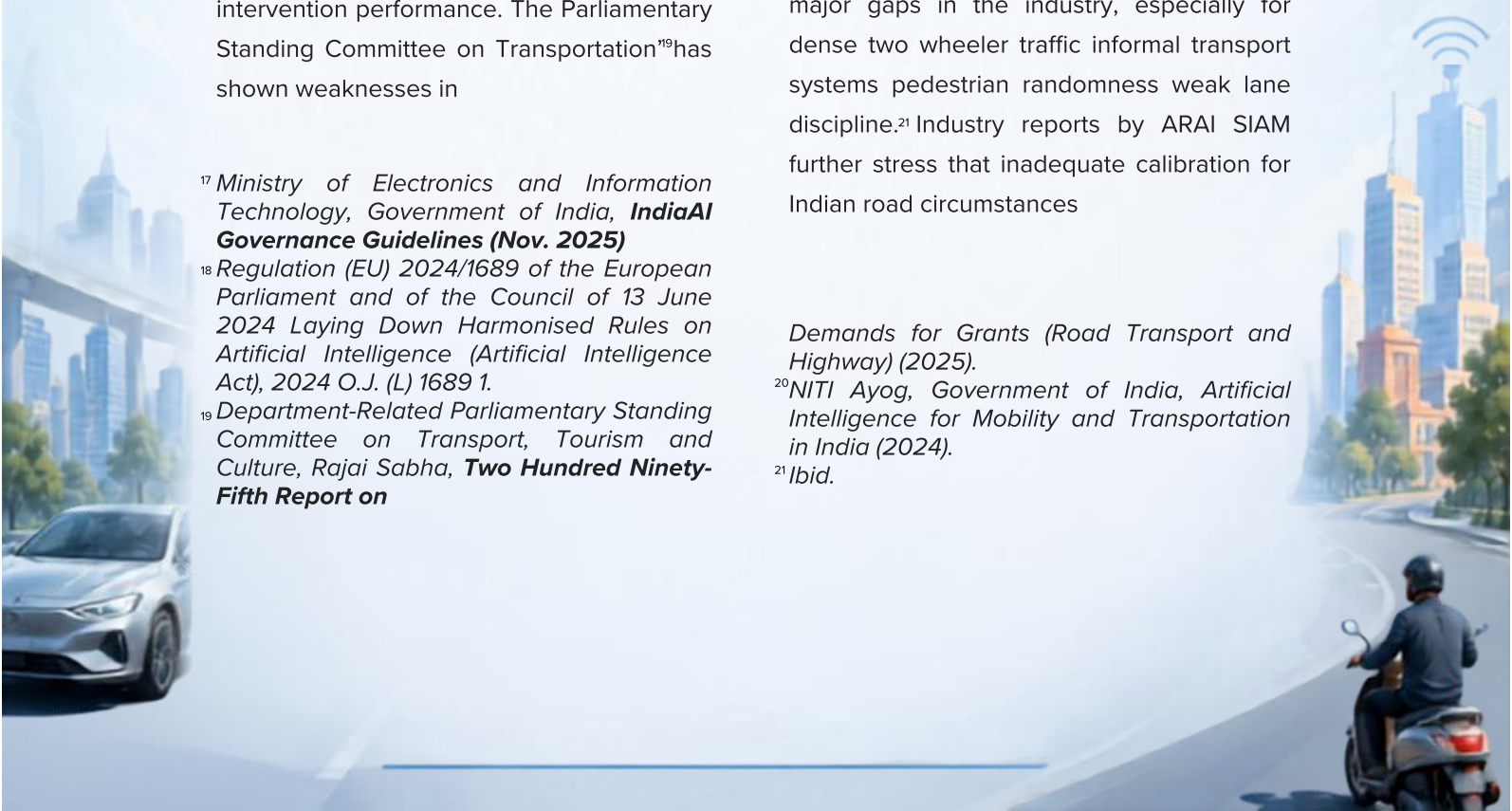
Manufacturer's Responsibility

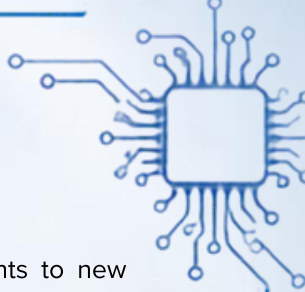
Many Indian Original Equipment Manufacturers(OEMs) are speedily adopting ADAS and AI, powered engaged safety features to improve the vying for position situation of their offerings although the majority of this deployment is still reliant on foreign driving logic, foreign trained perception models and software architectures tweaking for ordered Western or Eastern Asian road networks. According to NITI Ayog localising training data and verifying with India defined metrics continue major gaps in the industry, especially for dense two wheeler traffic informal transport systems pedestrian randomness weak lane discipline.²¹ Industry reports by ARAI SIAM further stress that inadequate calibration for Indian road circumstances

Demands for Grants (Road Transport and Highway) (2025).

²⁰NITI Ayog, Government of India, *Artificial Intelligence for Mobility and Transportation in India (2024).*

²¹ Ibid.





expands the risk of false positives delayed treatment unsafe system overrides particularly in semi urban mix mobility zones.²² Manufacturers regularly situation ADAS as a premium differentiator in SUVs and EVs but there is limited transparency regarding algorithmic limitations software update failures post market monitoring obligations. Without the mandatory reporting of incidents and audit trails, consumers are revealed to safety risks while manufacturers keep away from accountability for system failure.²³

progress need doctrinal adjustments to new conditions in tort and product liability jurisprudence. But no written into law provisions have described algorithmic neglect, software causation or OEM accountability for operating alone intervention failures. This produces a liability vacuum in which the victims of accidents deal with an unsure future, while manufacturers are operating without legal visibility that can be easily predicted.

Legal Gaps

India's liability framework has evolved mainly in reaction to human error rather than machine-aided decision forming. Under the *Motor Vehicles Act, 1988* it is presumed that a human force would be the causative agent by contrast under the *Consumer Protection Act, 2019* there seems to be unclear meaning as to whether incorporated AI software could be considered a product subject to strict liability. As the Law Commission of India has noted²⁴ out many times, technological

²²Automotive Research Association of India (ARAI) & Society of Indian Automotive Manufacturers (SAM), *AI Automotive Validation Challenges in Indian Driving Conditions* (2025).

²³ Federation of Automotive Dealers Associations (FADA), *Consumer Safety and ADAS Transparency in India's Passenger Vehicle Market* (2025).

²⁴ Law Commission of India, *Liability and Compensation in Technologically Product Systems* (Policy Discussion Paper, 2024).



Liability, Rights and Regulations

Tortious Liability of AI-Active Safety Systems

The greatest legal hurdle confronting automotive AI lies in the collapse of conventional tort principles when decision forming switches from human forces to algorithmic systems. Negligence establishes the backbone of tort law in India. To prove a claim, one has to demonstrate that there was a *duty*, and that this duty was *breached*, and that the breach managed to damage *caution*. Though, in AI-assisted systems, harm may happen as a result of sensor failures, faulty perception models, slow responses from software or faulty OTA updates rather than point human doing. It may be tough to use the conventional '*but for*' causation test as liability can lie at many different situations - what drives it, OEM software developer and data provider. In comparison to usual accidents, there may not be a single negligent person or party included. The economic advisory council to the prime minister has also commented that AI is a highly complicated able to adapt system and placing accountability cannot be done employing traditional linear fault models. It necessitates a shift towards ex-ante regulation frameworks with described duties.²⁵

Constitutional and Statutory Requirements

The automotive AI also raises constitutional issues in accordance with Article 21,²⁶ especially through driver monitoring systems, facial recognition access and connected telematics systems which are all collecting constant amounts of behavioural and biometric data. *Justice K.S. Puttaswamy (Retr.) v. UOI*²⁷, the recognition of privacy as a fundamental right in India requires that all forms of collection of personal data must meet the criteria for legality, necessity and proportionality. The *Digital Personal Data Protection Act, 2023*²⁸ also provides for principles relating to *lawful consent*,²⁹ *purpose limitation*,³⁰ data minimisation, *storage limitation*,³¹ accountability and data fiduciaries handling of personal data. Despite this, India does not currently have

²⁵ Economic Advisory Council to the Prime Minister, A Complex Adaptive System Framework to Regulate Artificial Intelligence in India (2024), https://eacpm.gov.in/wp-content/uploads/2024/01/EACPM_AI_WP-1.pdf.

²⁶ INDIA CONST. ART. 21.

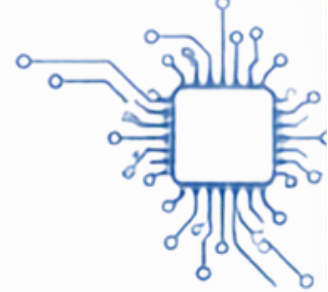
²⁷ *Justice K.S. Puttaswamy (Retd.) v. Union of India*, (2017) 10 SCC 1.

²⁸ *Digital Personal Data Protection Act, No. 22 of 2023, India Code (2023)*.

²⁹ *Digital Personal Data Protection Act, No. 22 of 2023, §§ 6 India Code (2023)*.

³⁰ *Digital Personal Data Protection Act, No. 22 of 2023, §§ 4, India Code (2023)*.

³¹ *Digital Personal Data Protection Act, No. 22 of 2023, §§ 8(7), India Code (2023)*.



an independent automotive data governance framework that addresses the consent structure, retention limits, localisation needs, black box vehicle data and surveillance boundaries for connected vehicles. This is creating a gap in constitutional and statutory law where technology for safety purposes may begin to expand into unchecked surveillance without meaningful user control or sector specific protections.

Comparative Foreign Regulations

Instances of regulatory standards employed by EU member States for categorizing AI systems employed in vehicle safety functions encompass high-risk designation needing conformity evaluations,³² documentation, human oversight post-market monitoring before deployment. In distinction to these requirements, China embraces certification weighty model through compulsory testing approval for smart networked vehicles under MIIT regulatory standards³³ that stress preventive accountability over post-accident blame attribution.

Furthermore, In USA the *National*

³² Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act), 2024 O.J. (L) 1689 1.

³³ Ministry of Industry and Information Technology of the People's Republic of China, Administrative Provisions on the Access of Intelligent Connected Vehicle Manufacturers and Products (2023).

Highway Traffic Safety Administration, General Order of 2021,³⁴ mandated reporting of crashes involving automated driving systems. India still relies on fractured standards and remedy based on negligence to handle Indian Road circumstances and Mixed-Traffic Realities.



³⁴ Nat'l Highway Traffic Safety Admin., Standing General Order 2021-01, Incident Reporting for Automated Driving Systems and Level 2 Advanced Driver Assistance Systems (2021).

Proposed Indigenous Framework

India has to have to create a regulatory architecture particular to the automotive AI industry that allows for its mix, traffic road network, inadequate lane system, supremacy of two wheelers and a complicated liability situation rather than simply importing foreign compliance frameworks. Although European Union employs ex-ante conformity evaluations for high-risk AI systems under *EU AI Act*, United States leans on post-incident reporting under *National Highway Traffic Safety Administration* oversight and India needs mixed framework uniting preventive certification legal liability allocation continuous specialised supervision. This can be introduced through a *three tier “AI mobility framework”*.

Tier I: Statutory Classification and Liability Allocation

A dedicated *AI-Automotive Safety Amendment* should be enacted, creating definitions for “*AI-Automotive Safety*” as applies. 1. “*AI-Automotive System*”: A system that uses Artificial Intelligence (AI) to support safe operation of an automobile. 2. “*Operational Design field (ODD)*”: The environment in which an AI-Automotive system functions, featuring weather circumstances, road topology, and traffic trends. 3. “*Automated Driving*”

Function”: The capability of a vehicle prepared with an AI-Automotive system to operate autonomously, without driver input. 4. “**Algorithmic Safety Failure**”: A failure mode that can arise in an AI-Automotive system due to an algorithm or software program creating the circumstances for a collision to happen, which needs statutorily specified thresholds and reporting mechanisms. OEMs should be maintained strictly liable for failures arising from these systems no matter what of fault being placed to software vendors, map providers or sensor suppliers. The requirement for mandatory *Event Data Recorders* (EDRs.), *black-box logging*, *software version traceability* and *post-crash obligations of algorithmic disclosure* should be enforceable. This adheres to the logic of *preventive liability* in the *EU AI Act* and not post-accident negligence Disputes.

Tier II: Risk Based Technical Certification

India should replace fragmented Automotive Industry Standards (AIS) compliance with a *Bureau of Indian Standards* and *Telecommunication Engineering Centre* (BIS-TEC) joint certification architecture based on functional risk.

PART A: Critical Intervention System





Consists of self-determining emergency braking, collision mitigation, lane centering correction, and radar-based rider protection for two wheelers.

Mandatory Requirements

1. 10,000 kms specific Validation;
2. monsoon and low visibility testing;
3. c. rural and urban mixed traffic simulation;
4. d. false positive testing;
5. e. edge-case validation for pedestrians, livestock.

6. **PART B: Monitoring and Assistive Systems**

7. Includes:

- Driver alerts
- Blind Spot Warnings
- Adaptive Lighting
- Parking Assistance



Automobile Regime”, it is critical for compliance to be continuous and not just approval-Based. In plus to the above requirements for continuous compliance, an **Automotive Data Protection Code and Rules** under DPDPA, 2023 must control behaviour-related telemetry, driver monitoring data, facial recognition access and vehicle-to-cloud communications through consent architecture, retention limits, localisation requirements, audit obligations. India requires to switch from import of automotive intelligence, and into governing it through Indian law-datasets and accountability systems.

Tier III: Continuous Enforcement and Data Governance

The function of a country-wide *AI Automotive safety testing centre (AASTC)* should be that of specialised regulator for pre-market certification, post-market software audits, OTA update verification, recall guidelines and Bharat NCPA *AI Safety index scoring*. In parallel to China’s highly strict certification-based Smart Automotive Regime”, it is critical for compliance to be continuous and not just approval-Based.



³⁵ Ministry of Industry and Information Technology of the People’s Republic of China. Administrative Provisions on the Access of Intelligent Connected Vehicle Manufacturers and Products (2023).

Conclusion

Artificial Intelligence is no longer a future possibility in India's automotive industry, it stands today in vehicles operating on Indian roads via ADAS, related Mobility Systems & AI supported involved safety tech. In practice, legal and regulatory bodies are operating based upon presuppositions designed for human engines and mechanical failures as opposed to algorithms and software led decision forming. This generates a dangerous hole between the technological deployment and public accountability. Lack of regulation, reliance on imports and poor localization of AI systems manufactured by companies, and shortage of protection afforded by tort law and privacy laws together create a high-risk governance vacuum. India cannot counting on the imported regulatory models without modifying them according to its particular traffic circumstances, infrastructure restrictions and liability framework. The answer lies in the regulation of aboriginal data-Indian testing standards and thorough manufacturer liability. India must shift apart from importing automotive intelligence to governing it through Indian law and accountability.



**SAFETY
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**ACCOUNTABILITY
& TRUST**





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