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BRIDGING LIABILITY GAPS IN AUTONOMOUS TRANSPORT

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The emergence of autonomous transport signifies a profound fundamental shift in the modern mobility by transferring the locus of control from human cognition to algorithmic performance. This paradigm shift does not merely alter the mechanics of transportation, but it also fundamentally disrupts the centuries old legal doctrines that govern vehicular torts and liability. As transportation ecosystems evolve from human centric operations to complex AI-defined networks, the legal taxonomy of blame becomes increasingly obscured. Therefore, this raises the question of central academic inquiry, as on how jurisprudence can adapt to an environment where the driver is no longer a conscious legal subject, but rather a confluence of multi-sensor fusion architectures and continuously adapting machine learning models.

To comprehend the ensuing liability chasm, one must first dissect the established taxonomy of driving automation, which is universally standardized by the Society of Automotive Engineers (SAE) into Levels 0 to 5. The lower tier firmly anchor liability within the human operator, treating advanced driver assistance systems as mere tools that require constant human oversight. Conversely, Level 5 represents full automation across all operational design domains, theoretically acquitting the human occupant of operational responsibility[1]. The profound legal complexities, however, seem to appear predominantly within the transitional phases, particularly in Level 3 or conditional automation. In this stratum, the automated driving system navigates the vehicle within a strictly defined domain but mandates human intervention when the system encounters environmental or situational constraints exceeding its parameters. This mandatory handover process creates an unsafe environment and an uncertain liability,

[1] James Ng, *Back in the Driver's Seat: The United States Should Enact a Unified Automated Vehicle Law and Regulation*, 39 BERKELEY TECH. L.J. 1, 7–9 (2024)

wherein an accident may occur precisely during the indefinite period of time, when control is suspended between an uncapable algorithm and an unprepared human operator[2].

This functional transition exposes the severe limitations of traditional principal-agent liability doctrines. Historically, vicarious liability and the doctrine *of respondeat superior dictate* states that a principal may be held legally accountable for the negligent actions of their human agent. However, transplanting this homocentric framework on autonomous vehicles yields insurmountable jurisprudential friction. An artificial intelligence cannot legally constitute an agent because it lacks juristic personhood, moral agency and the capacity for conscious negligence. Furthermore, contemporary AI-defined vehicles exhibit emergent, self-modifying behaviours driven by continuous operational learning and vehicle-to-infrastructure communication. When an autonomous system executes an operation that is mathematically optimal but contextually disastrous, and then deviating from predictable programming due to adversarial sensing or complex multi-agent coordination, it finally becomes legally unsound to attribute traditional fault or *mens rea* to the human owner[3]. Consequently, a severe accountability deficit emerges. Victims of autonomous vehicle torts are left without a human tortfeasor to sue, while proving strict design defects under traditional product liability frameworks against the manufacturer remains procedurally difficult and technically opaque due to the mysterious nature of algorithmic decision making.

Bridging the systemic liability gap created by the emergence of autonomous vehicles where the transition from human cognition to complex, fragmented AI ecosystems renders traditional driver negligence and principal-agent doctrines completely obsolete, necessitates a radical jurisprudential shift toward strict enterprise liability and modernized economic risk distribution. Because the intricate nature of autonomous supply chain introduces the dangerous problem of many hands, that is allowing corporate entities to conceal the negligence behind algorithmic black boxes[4]. Evolving international frameworks like the European Union's revised Product Liability Directive and the AI Act[5] are explicitly categorizing software, over-the-air updates, and cybersecurity as legally liable products. To bypass the catastrophic legal

[2] Julia Roussou, Armira Kontaxi, Apostolos Ziakopoulos, George Yannis, *A Review of Legal Considerations and Liability Allocation in Connected and Automated Vehicles*, NAT'L TECHNICAL UNIV. OF ATHENS (2024),
[3] Simon Chesterman, *Artificial Intelligence and the Problem of Autonomy*, 1 ASIAN J. L. & INFO. TECH. 1 (2020)
[4] Asaro Peter .M, *The Liability Problem for Autonomous Artificial Agents*, AAAI SYMPOSIUM ON ETHICS AND AUTONOMOUS AGENTS (2016)
[5] European Parliament, Directorate-General for Internal Policies, Artificial Intelligence and Civil Liability, PE 776.426 (2025),

uncertainty and ensure the seamless allocation of pecuniary damages, progressive legal architectures now dictate that ultimate accountability must rest at the apex of the commercial hierarchy, legally designating the Original Equipment Manufacturer (OEM) or centralized fleet operator as the massive guarantor of the integrated system. Consequently, victims are immediately insulated from persistent finger-pointing by corporates and receive rapid indemnification through mandatory, industry funded "no fault" insurance pools, Thereby, entirely bypassing the initial need to prove complex technical malfunctions[6]. The burden of digital forensic analysis and division of granular fault then shifts away from the public and entirely towards the commercial actors, through sophisticated mechanisms of contractual indemnification and insurance subrogation. The primary manufacturer is empowered to pursue secondary litigation against specific, defective third-party vendors. Ultimately, this elegant composite liability system seals the accountability deficit by guaranteeing the injured party's right to prompt financial restoration, while simultaneously forcing the market to curb systemic risk and establishing a ruthless internal policing mechanism that fiercely encourages rigorous safety audits across the entire autonomous supply chain[7]. Thereby, the complex issue related to liability from autonomous vehicles can be sorted to an extent.

CITATIONS:

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