

AI

Impact of AI in the Automotive IP Space

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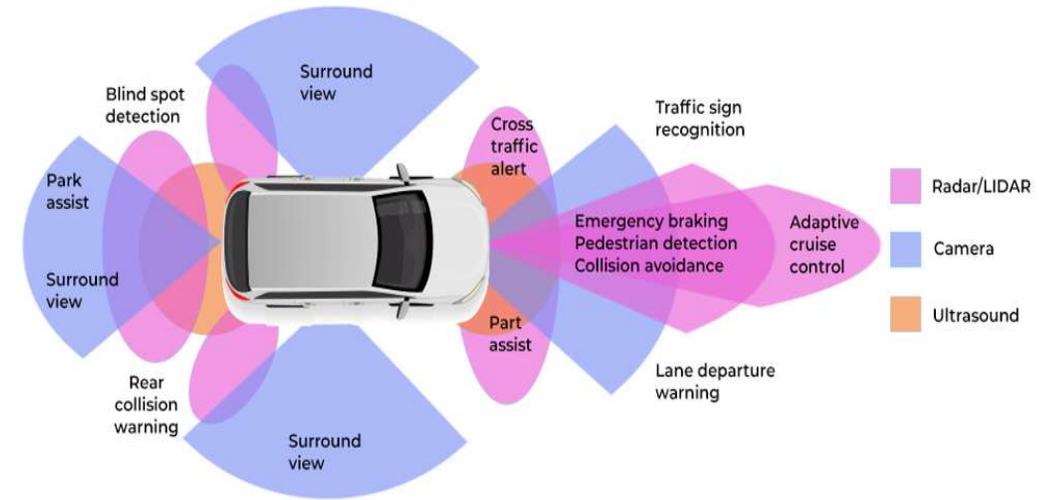
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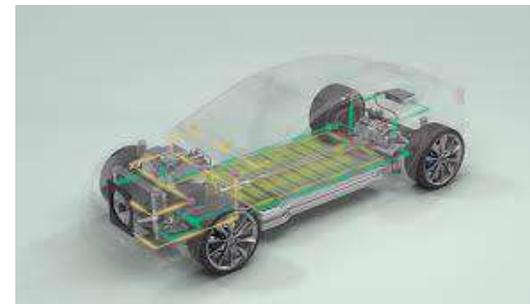
AI as the new engine of Automotive Innovation

Artificial Intelligence today powers —

- Autonomous driving systems
- Advanced Driver Assistance Systems (ADAS)
- Predictive Maintenance
- In-car voice assistants
- Battery management and energy optimization
- Connected car platforms
- Intelligent Manufacturing and Robotics
- Personalization of in-vehicle infotainment
- Fleet Operation - Route optimization

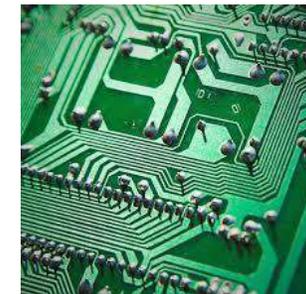


Intellectual Property becomes both a shield and a sword in this competitive race.



Types of IP in Automotive sector

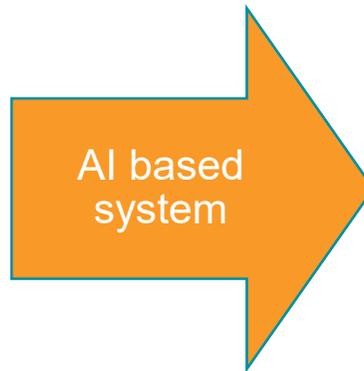
- **Patents** – Hardware + software or algorithms for managing Systems like Driving, Battery management etc.
- **Copyrights** - Embedded software and Design Models
- **Trade Secrets** - Training data, Proprietary models and algorithms
- **Trademarks** - Branding of digital features
- **Semiconductor Integrated Circuits Layout-Design Act, 2000** - Advanced chips circuits like Neuromorphic Chips - designed to mimic the human brain's neural structure for incredibly high-efficiency AI processing and TPU (Tensor Processing Unit) for accelerating



Rethinking Patents in the Age of AI



- HVAC control buttons
- Manual driver monitoring
- Manual Engine
- Suspension System
- Braking System



- Auto mode HVAC system
- Autonomous Driving
- Engine Control through parameters
- Predictive Suspension System
- Auto Braking System

Technology related to patents/Applications–

- Predictive Suspension spring – Control spring Stiffness as per potholes - Audi
- Battery Charging Suspensions – BMW - convert kinetic energy from suspension movement (bumps/vibrations) into electrical energy to charge batteries
- Adjust fuel injection, ignition timing, and air-fuel ratios using AI to optimize performance - Mazda

AI Systems utilized

- Machine-learning models for object detection
- Sensor fusion algorithms
- Decision-making logic in autonomous vehicles
- AI-based vehicle-to-vehicle communication

Trade Secrets vs Patents: A Strategic Shift

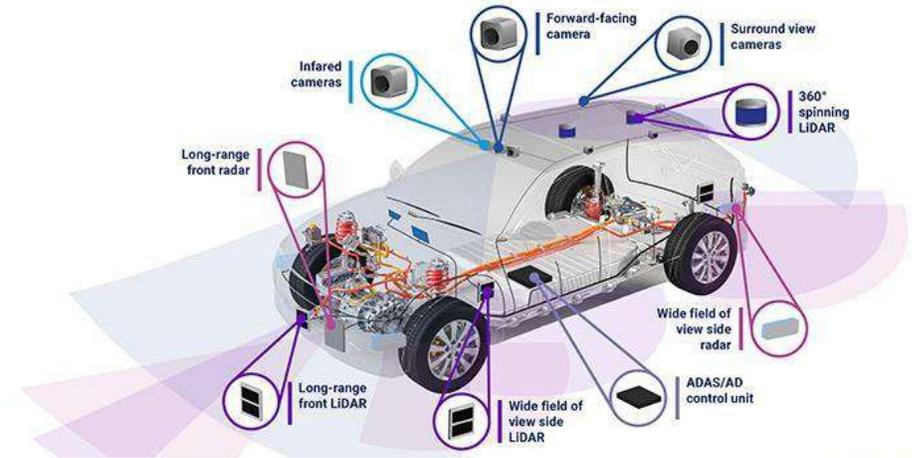
AI systems thrive on data:

- Driving behavior data
- Sensor and camera feeds, external surveillance
- Location and biometric data
- LiDAR

This raises pressing IP and regulatory questions:

- Is vehicle-generated data proprietary?
- Does the car owner, manufacturer, or software provider own it?
- How do data protection laws interact with IP rights?

Balancing **Data ownership, Privacy, and Innovation** is one of the biggest challenges ahead.



Data Governing Tools

- Defend Trade Secret Act (DTSA)
- Security Measures - NDA's and security protocol – control over user access & Employee Contracts
- Regulatory Compliance

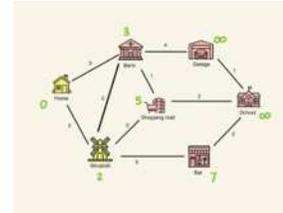
Trade Secrets vs Patents: A Strategic Shift

Trade secret -

- Must have commercial value
- Must be secret (Not in Public Domain), and
- The company must take reasonable steps to protect it.

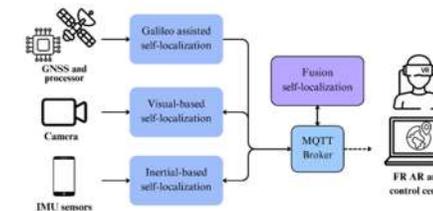
Examples of Trade Secret

- Navigation Algorithms
- Sensor Fusion and Localization
- Source Code and Control Systems
- Specialized Manufacturing Process
- Detailed cost-cutting strategies



Navigation Algorithms

Source Code



Sensor Fusion and Localization

Privacy Protection Strategies –

- **Anonymization & Encryption** - removes or modifies personally identifiable information (PII)
- **Privacy by Design** - Privacy at development stage
- **Data Minimization** - use only necessary data

Data as the New Oil — But Who Owns It?

Data itself is usually NOT “property” –

Instead, protection comes indirectly via:

- Contract law between different stakeholders
- Trade secrets (confidential datasets, labeling methods)
- Copyright (software + curated databases in some regions)
- Privacy law (personal data) like Digital Personal Data Protection (DPDP) Act, 2023

OEM

- Sensors are embedded in *their* hardware
 - Software platforms are *their* proprietary systems
 - AI models are trained using *their* infrastructure
- They often treat driving data as a **trade secret or contractual asset**.

Driver/Owner

Drivers believe data owned by them as:

- It's *their* behavior 2. *their* location 3. *their* driving patterns
- They assert personal data rights, especially under privacy regimes.

AI Developers & Tech Platforms

players like Waymo rely on billions of real-world miles to train models.

“The intelligence comes from our algorithms—so we own the value.”

This creates tension between **data providers** and **model creators**.

Trademarks and Branding in AI-Driven Vehicles

AI has also impacted **automotive branding**:

1. AI-named features like autopilot systems
2. Voice assistants as brand identifiers
3. Software updates as service marks



1. General Motors - Super Cruise (hands-free highway driving system)
2. Tesla – Autopilot & Full Self-driving (FSD)
2. Ford – BlueCruise (AI-assisted hands-free driving platform)
3. BMW - Remote Software Upgrade (Service Mark)
- Adds new driving features post-purchase

Trademark protection now extends beyond logos to **digital experiences and AI-powered functionalities**.

Enforcement and Liability Challenges

When an AI-driven vehicle makes a decision that causes harm:

- Who is liable — the manufacturer, software developer, or data provider?
- How does IP ownership affect responsibility?

These questions are pushing courts and policymakers toward **new liability frameworks**, closely tied to IP ownership and control.



Enforcement and Liability Challenges

Tesla Autopilot Wrongful Death Verdicts (Florida, 2025) –

- Tesla Model S – Autopilot Driver Assist Engaged in Accident
- \$329 million in damages (compensatory + punitive) to the victims' family, assigning Tesla about 33 % liability for the crash

Source

Elaine Herzberg (Uber Self-Driving Car, 2018) –

- Elaine Herzberg was struck and killed by an autonomous Uber test vehicle in Tempe, Arizona, in 2018
- A negligent homicide charge against the (human safety) backup driver.

Source

Classified as Public

Legal Principles –

- **Negligence (Tort)** – Manufacturers failed to take appropriate reasonable care
- **Product Liability** - Plaintiffs often assert that the autonomous system itself is defective

Key Legal and Technical IP Challenges

- **Patentability of AI Algorithms**

Legal systems vary globally in classifying AI and machine learning software for patent protection, creating uncertainty.

- **Ownership of AI-Generated Inventions**

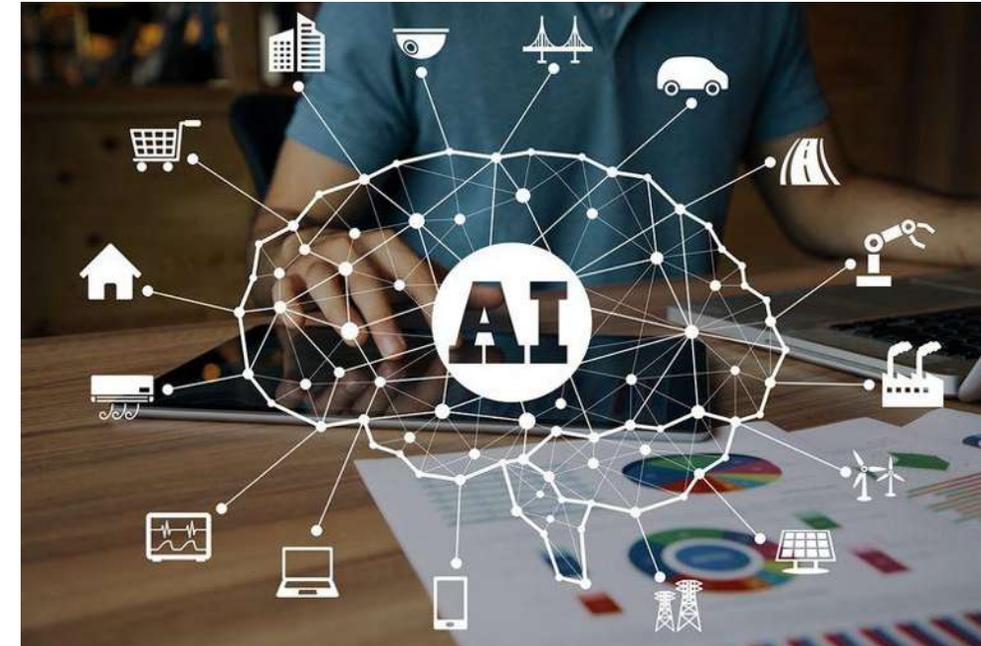
Determining the rightful inventor of machine-generated innovations is complex, involving humans, companies, or AI systems.

- **Data Privacy Challenges**

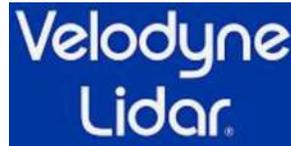
Protecting large proprietary driving datasets while complying with privacy laws like GDPR is increasingly difficult.

- **Cross-Border IP Risks**

Global automotive firms face conflicting regulations and geopolitical variability in IP enforcement across countries.



Case Study



Quanergy Systems, Inc. v. Velodyne Lidar USA, Inc. (2022)

- **Facts** - Velodyne's patent relates to a LiDAR-based 3D point cloud system featuring laser emitters and detectors rotating at high speeds (at least 200 RPM) to map surroundings, crucial for autonomous vehicles.
- **Issue** - The dispute centered on whether the term "lidar" in the patent was broad (including any laser scanning) or narrow (specifically, time-of-flight lidar), and whether the patent was rendered obvious by previous technologies
- **Held** - The PTAB and Federal Circuit sided with Velodyne, defining "lidar" specifically as "pulsed time-of-flight" (ToF) lidar, and determined that the evidence of commercial success and industry recognition (nonobviousness indicators) outweighed Quanergy's arguments.

Source



Waymo LLC v. Uber Technologies Inc.

- **Facts** - Anthony Levandowski, a prominent self-driving engineer, downloaded over 9.7 GB of Waymo data before leaving to start "Otto," which Uber acquired shortly after for roughly \$680 million.
- **Issue** - Alleged theft of LiDAR designs and self-driving trade secrets.
- **Held** - Case Settled after evidence of misuse of confidential AI Files, Uber Paid compensation and agreed to restrictions

Source

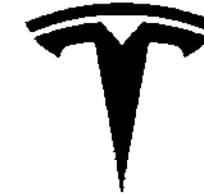
Case Study



SAS Institute Inc. v. World Programming Ltd

- **Facts** - WPL created software, WPS, that mimicked the functionality of SAS's data analysis system by studying its manuals and learning edition, without copying the source code
- **Issue** - Whether software functionality and logic are copyrightable.
- **Held** - Functionality and algorithms are not protected by copyright. Only source code and expression are protected.

Source



Tesla Autopilot – Dec 2025 case

- **Facts** - “Autopilot” or “Full Self Driving” Trademark for self driving cars
- **Issue** - Whether the term “Autopilot” is misleading as the still driver has to be present on driver seat.
- **Held** - Even if trademarked, AI feature names must be definitive and automaker a chance to fix any confusing claims about its Autopilot and FSD systems.

Source Source

Conclusion: The Road Ahead

- To conclude, AI is not just transforming vehicles — it is transforming intellectual property itself.
- The future of automotive IP will demand:
 - Strong collaboration between Technology Engineers and IP professionals
 - Adaptive legal frameworks like Data Protection etc.
 - A balance between innovation, competition, and public safety
- Those who understand and strategically manage AI-driven IP will lead the next generation of mobility.

THANK YOU!

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