



# Future Trends in Electrical Vehicle According New Technology and Its Operation

N.S.Vijaykumar,<sup>1\*</sup> M. Arther Clive<sup>2</sup>, D.Nagarajan<sup>3</sup>, .S.Selvam<sup>4</sup>, Dr.M.Kumareson<sup>5</sup>

<sup>1\*</sup> Assistant Professor, Department of Mechanical Engineering, Sri Sai Ranganathan Engineering College Coimbatore.

<sup>2</sup> Assistant Professor, Department of Mechanical Engineering, Akshaya college of Engineering and Technology, Coimbatore.

<sup>3</sup> Assistant Professor, Department of Electrical and Electronics Engineering, JCT College of Engineering and Technology, Coimbatore.

<sup>4</sup> Professor, Department of Mechanical Engineering, Adithya Institute of Technology, Coimbatore.

<sup>5</sup> Professor and Head/Chemistry, Nehru Institute of Technology, Coimbatore.

\*Corresponding Author: N.S.Vijaykumar,

\*Assistant Professor, Department of Mechanical Engineering, Sri Sai Ranganathan Engineering College Coimbatore.

(Received: 07 January 2024

Revised: 12 February 2024

Accepted: 06 March 2024)

## KEYWORDS

IoT, AI, Technology,  
Blockchain,  
Automobile.

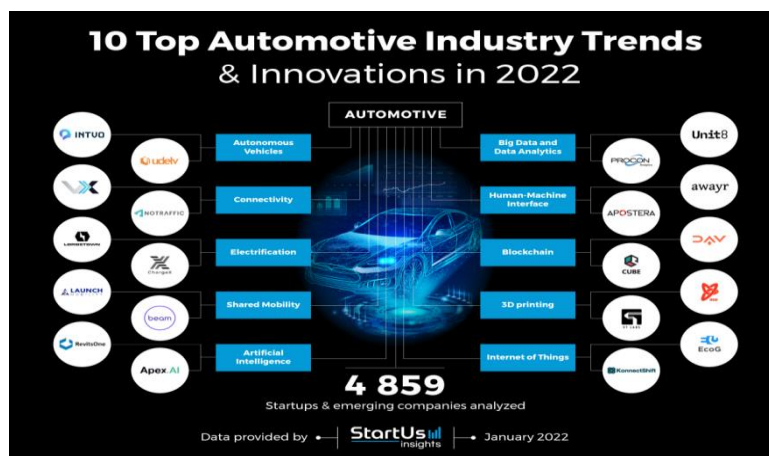
## ABSTRACT:

Information-centric technologies play a major role in the future of the automobile industry, according to a thorough analysis of trends in the industry to look forward to in 2022. At an unprecedented rate, the sector is incorporating new technology into its operations. In addition to long-established technologies like artificial intelligence (AI) and big data & analytics, emerging technologies like the internet of things (IoT) and block chain have several uses in the automobile industry.

## 2.Introduction

In evaluated a sample of 4 859 worldwide startups and scaleups for this in-depth study on the Top Automobile Industry Trends and Startups. This research yielded data-driven innovation intelligence, which helps you make better strategic decisions by providing an overview of new technology and companies in the automotive sector. These insights were obtained using our Start us Insights Discovery Platform, which is driven by Big Data and Artificial Intelligence and covers over 2, 093, 000 startups and scaleups globally.

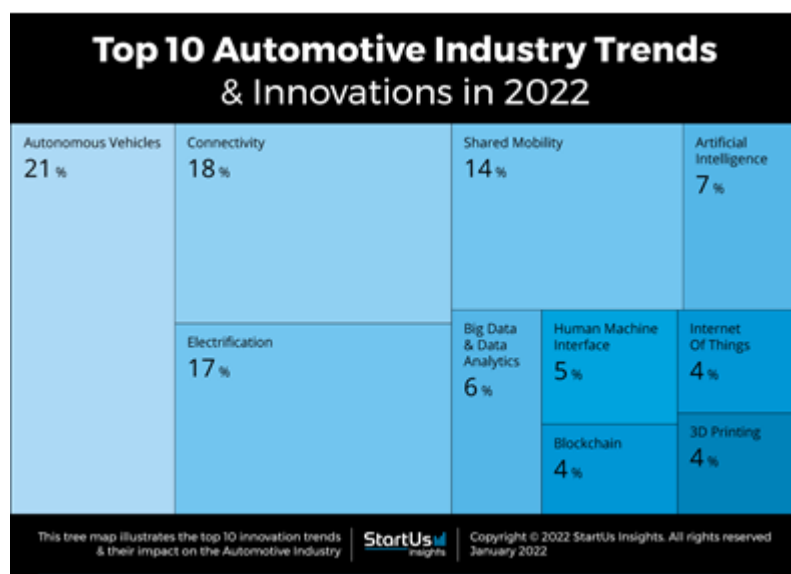
The platform instantly provides an in-depth assessment of developing innovations in a certain industry, as well as early identification of relevant startups and scaleups. The Creativity Map below gives you an insight of the Top 10 Automobile Trends & Inventions that are affecting businesses throughout the world. Furthermore, the Automotive Creativity Map identifies 20 hand-picked businesses, all of which are working on cutting-edge technology that will progress their respective fields. Simply contact us to know more about personalized insights.





The Tree Map below depicts the top ten automotive sector trends that will have an influence on businesses in 2022. Emerging firms are aiming to develop the first completely autonomous car for city roads, which will speed up in-vehicle networking and IoT improvements. Furthermore, as governments seek to reduce their reliance on fossil fuels, a growing number of

burgeoning electrification businesses are developing electric cars and charging infrastructure. Promoting and developing shared mobility options that incorporate first- and last-mile connections as well as urban mass transportation is another strategy to minimize the number of automobiles on the road.



### 3. Autonomous Vehicles (AVs)

Self-driving or autonomous cars eliminate the need for human driven cars and appear to be on the verge of revolutionising daily mobility. AV fleets aim to improve public transit safety by expanding the scope of last-mile shipments, reducing downtime, and reducing

downtime. By minimizing accidents caused by driver weariness or carelessness, for example. Specialized established methods, such as Intelligence computer vision, are used by AVs to detect impediments along the road.





### 3.1 Intvo improves the safety of autonomous vehicles.

Intvo is a firm located in the United States that produces pedestrian behaviour prediction technologies. Unlike two-dimensional (2D) and (3D) object identification systems, which take into account only a few criteria, their approach examines pedestrians' head position, eye contact, and leg motions, as well as weather circumstances, before assigning a danger level. This lowers the number of false positives in human activity recognition and improves the accuracy.

### 3.2 Udelv creates self-driving vehicles for delivery in Las Vegas.

Udelv, a firm established in the United States, delivers autonomous cars for last-mile delivery. For human-assisted guiding in unusual scenarios, it combines powerful AI algorithms and hyper-fast teleoperations. The vans of the company have a cargo capacity of around 360 kg (800+ lbs) and can travel at speeds of up to 100 km/h (60 mi/h). When the order comes, the vans distribute groceries from neighbouring supermarkets and give out a push notice.

### 3.3 Vehicle Connectivity

Vehicles now have a tamper-proof digital identification that distinguishes them from the rest of the network. This makes it simple to track vehicle data for a variety of applications, including health care coverage, driver education, proactive maintenance, and fleet management. Vehicle data sharing benefits not only the individual consumer, but the entire mobility ecosystem. Vehicle connection solutions are developed by startups and scaleups to link and share data with other cars (V2V), an electric vehicle grid (V2G), public

infrastructure (V2I), and new and developing methods to use vehicle data (V2X).

### 3.4 V2X Network offers a Connected Vehicle Data Platform

V2X Network, a British company, offers a vehicle-to-everything (V2X) network for driverless interactions that combines location - based and caching to enable real-time communication with minimal latency. The platform is built on distributed ledger technology (DLTs) and is extremely scalable. To improve security and privacy, the firm leverages enterprise-grade encryption to give consumers control over their data.

### 3.5 NoTraffic facilitates Digital Road Infrastructure Management

NoTraffic, an Israeli company, is developing an AI-powered traffic signal gateway that digitizes road infrastructure governance and links vehicles to city roadways to address a variety of traffic-related issues. To enable smart mobility, all road users' data is broadcast and analyzed in real time. Additional services, such as micro transactions and micro mobility, are built on top of the solution.

## 4. Electrification

The depletion of fossil fuel supplies and the environmental damage caused by their usage need the promotion of electric transportation options. EVs must overcome difficulties such as high price, weak battery, insufficient charging infrastructure, fleet electrification, and powering renewable energy-based charging networks in order to achieve increased acceptance. In order to address these issues, as well as the need to reduce global greenhouse gas emissions, entrepreneurs are developing electrification solutions.





## 4.1 Lordstown Motors builds an Electric Pick-up Truck

Lordstown Motors Corps, based in the United States, produces an all-electric pickup truck. Endurance™, the truck, is meant to be a tough work vehicle with fewer moving parts than standard commercial vehicles, making maintenance easier. It has four hub electric motors for four-wheel drive and can go up to 100 miles.

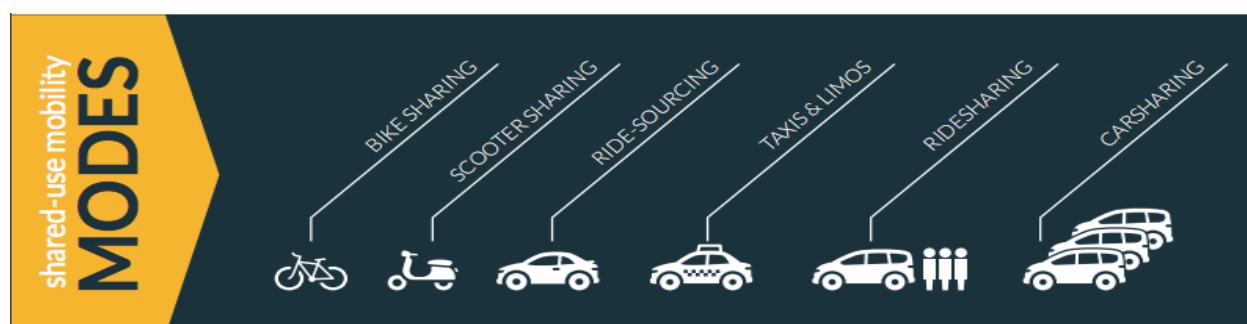
## 4.2 ChargeX specializes in Modular Electric Vehicle Charging Solutions

ChargeX, a German business, offers a modular electric vehicle charging technology that turns parking spots into charging stations. Aqueduct, the startup's platform, is simple to set up, has four charging modules with a

total capacity of 22kW, gives monthly reports, and requires a Type 2 charging connection. The technology identifies each car's power requirements and manages the charging pace for each vehicle automatically.

## 5. Shared Mobility

New business models that concentrate on shared mobility as an alternative to traditional car ownership have emerged as a result of linked automobiles. This makes mobility-as-a-service (MaaS) possible while also discouraging the usage of underutilised automobiles. Such solutions address a city's or a company's needs without adding additional cars, lowering fleet wait times and emissions from gasoline or diesel vehicles.



## 5.1 Launch Mobility combines Shared Mobility Solutions in a Single Platform

Launch Mobility, a firm established in the United States, creates a platform for a variety of shared mobility solutions. Free-floating or station-based car sharing, sophisticated shuttle services, shared dockless scooters, keyless rental programmes, and peer-to-peer shared mobility are all available through the LM Mission Control™ platform. Business customers may manage their fleets using the LM MisszonControl™ dashboard. Furthermore, their drivers manage reservations and remotely access vehicles using off-the-shelf or white-labeled applications.

## 5.2 Beam develops Electric Scooters for Urban Mobility

Beam, a Singapore-based firm that promotes shared mobility in the Asia-Pacific area, concentrates on e-scooters. Their scooters are built with an aircraft-grade

aluminium frame and are designed for sharing, safety, dependability, and longevity. On the app, users can find the nearest Beam scooter and park it in a prominent public area after their journey. With addition, the micro-mobility platform provides a sustainable option to short-distance journeys while also assisting in traffic flow regulation in cities.

## 6. Artificial Intelligence

Machine learning, deep learning, and computer vision are examples of artificial intelligence technologies that are used in robotic automation in the automobile sector. These help self-driving cars navigate the road, manage fleets, aid drivers in improving their safety, and enhance services like vehicle inspection and insurance. AI also has uses in the automobile industry, where it helps to speed up production and cut costs.





### 6.1 RevitsOne provides AI-based Fleet Management Solutions

RevitsOne, an Indian company, provides AI-powered fleet management software for fleets of all sizes. The vehicle management system of the startup gives data on speed, operating vitals, and health. Voicera ID, a voice-based virtual assistant that helps drivers keep track of the information they require, is beneficial to drivers. Furthermore, the onboard speed recorder sets a speed restriction to prevent risky driving practises.

### 6.2 Apex AI offers an Integrated Automotive Data Management Platform

Apex AI, a business located in the United States, helps automakers execute complicated AI solutions. Apex.OS is a platform for developing autonomous mobility solutions that operates on automotive electronic control units (ECUs) and provides strong, dependable, and secure APIs. ApexAutonomy provides

modules for autonomous vehicle 3D sensing, localisation, and control. Finally, MARV.Automotive is an information management platform that can be configured and extended to reliably transport data from the car to the cloud.

### 7. Big Data & Analytics

Throughout the lifespan of a vehicle, the era of big data and sophisticated analytics influences many decisions. Vehicle data allows predictive maintenance, informs fleet management, and warns concerned authorities in the event of an accident. Furthermore, consumer automotive data is used to boost sales, improve supply chains, and improve product design for newer automobiles. Big data solutions are being developed by startups and rising firms to assist car manufacturers and auxiliary sectors in streamlining their operations and increasing profitability.





### 7.1 Automotive finance solutions are provided by procon analytics.

Procon Analytics, a firm established in the United States, uses big data to provide an automobile loan solution. The technology takes and analyses millions of data points in real time, allowing lenders to assess and decrease risk in real time.

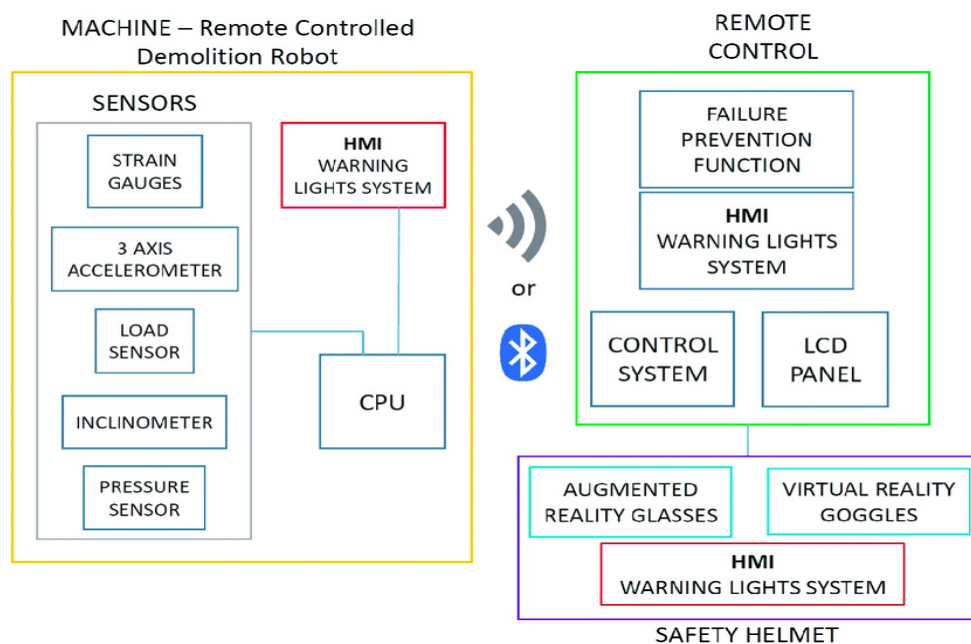
### 7.2 Unit8 offers Automotive Big Data Solutions

Unit8, a wiss company, offers digital solutions for a variety of sectors using big data and analytics. For the automotive industry, the firm creates predictive models that push automakers to enhance their marketing and operations in order to maximise revenue. These models

include information on product design, pricing, and after-sales support.

## 8. Human-Machine Interfaces (HMI)

Self-driving cars and linked automobiles will radically alter how drivers interface with vehicles as the automotive environment evolves. To drive automobiles, human-machine interfaces employ voice-based or haptic input. These broaden the range of how and what components of an automobile may be controlled by users. As a result, such user interfaces make driving safer and more pleasurable. Smart virtual assistants are another type of HMI that aid drivers and riders in interacting with automobiles and other service companies.



### 8.1 Awayr creates Advanced HMI Solutions for Connected Cars & Autonomous Vehicles

Awayr is a firm established in the United States that creates human-machine interfaces for automobiles, unmanned aerial vehicles (UAVs), and robots. The firm collaborates with vehicle original equipment manufacturers (OEMs) to shorten HMI development cycles and improve interface safety. Awayr also creates methods for managing driver attention in unusual settings, such as on the road.

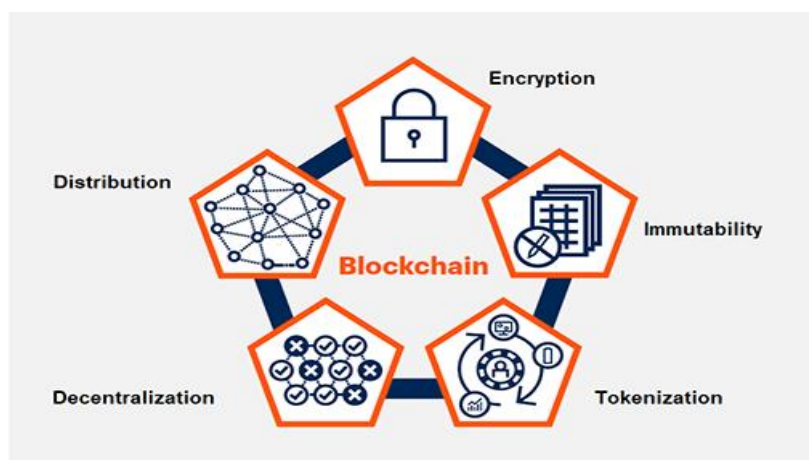
### 8.2 Apostera specializes in Advanced Driver Assistance Systems (ADAS)

Apostera, a German firm, provides an innovative driver-assistance system (ADAS). The technology, developed by the firm, combines augmented reality

(AR), a smart camera, and fisheye monitoring to light the path on twists, curves, hills, and difficult intersections. This aids drivers in maintaining lane separation, reduces crashes, and allows for autonomous driving choices. Furthermore, the system may be tailored to any automobile type or OEM demand.

## 9. Blockchain

In the automobile business, blockchain allows for a variety of uses. These include shared mobility services such as ride-hailing, urban transit, and delivery, as well as exchanging vehicle data through a secure network for connection. Furthermore, blockchain may be used to verify the replacement parts supply chain or ensure that raw materials and replacement parts are supplied solely from legal and trustworthy sources.



### 9.1 Cube Intelligence builds Blockchains for Autonomous Vehicles

Cube Intelligence, a British business, is working on a blockchain-based security framework for self-driving cars. Hash codes are used by the startup's technology to prevent malicious assaults or hacking concerted efforts on autonomous and connected vehicles. The technology collects data on movement and emissions in real time. Cube Intelligence also provides AVs with ride-hailing and valet parking services, as well as smart parking management solutions.

### 9.2 DAV offers a Decentralized Autonomous Vehicle Platform

DAV, an Israeli firm, proposes a blockchain-based decentralised autonomous vehicle platform. The platform enables autonomous cars to locate other AVs,

service providers, or clients in their immediate vicinity. Vehicle-to-vehicle (V2V) communication can be done on-chain with smart contracts or off-chain via DAV protocols. Drone charging networks, drone flight planning, and open mobility are among the protocols developed by the firm.

### 10. 3D Printing

The car sector benefits from 3D printing in three ways. For starters, it allows for quick prototyping using 3D printed models, which speeds up the design and analysis portions of the manufacturing process. Second, it encourages organizations to print spare parts that are specific to their needs. Finally, additive manufacturing of matrix composites results in lighter, stronger, and more lasting vehicle parts.





### 10.2 9T Labs develops Carbon Composites for Automotive Applications

9T Labs, a Swiss firm, uses additive manufacturing to make carbon composites for the automobile sector. Fibrify, the startup's design software, uses additive fusion technology to optimise fibre placement and automate equipment manufacture in order to mass-produce carbon fibre items. 3D printed composites are less expensive, lighter, excellent dimensional, corrosion-resistant, and have higher strength and stiffness.

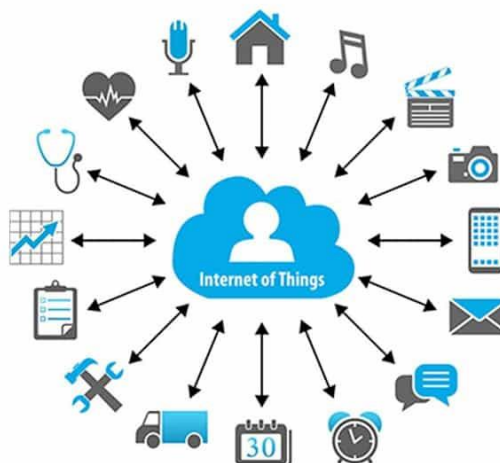
### 10.3 Moi manufactures 3D Printed Automotive Parts

Moi, an Italian company, manufactures elevated parts for the car industry using thermosetting lightweight materials and 3D printing. Moi deposits fibres with the use of continuous fibre manufacturing (CFM)

technology, robotic autonomy, and digital fabrication. As a consequence, the system can produce composites for panels, frames, and interior materials at a large scale. Other industries served by the firm include aeronautical, construction, and biomedical.

## 11. Internet of Things

IoT allows for safe communication between automobiles, as well as between vehicles and infrastructure components, in the automotive sector. With better fleet management, the technology enhances road safety, alleviates traffic congestion, and cuts pollution and energy consumption. Advanced sensing technologies are being developed by startups and growing firms to collect more data about the vehicle and allow it to comprehend its surroundings. Fuel and toll payments are also automated thanks to the technology.



### 11.1 EcoG builds an Electric Vehicle Charging Platform

EcoG is a firm located in Germany and the United States that provides an IoT-based computer system and framework for EV charging. Manufacturers may use the startup's tools to create and maintain EV charging infrastructure that is easy, quick, and scalable. It also enables operators to integrate services and deployments into chargers in order to make charging more efficient.

### 11.2 KonnectShift develops IoT-based Fleet Optimization Solutions

KonnectShift is a Canadian firm that offers Internet of Things (IoT) solutions for fleet and wealth management. The company is working on the Konnect – GS01, an autonomous electronic logging device (ELD) that tracks vehicle health in real time. Route planning and optimizing for real-time dispatch, sophisticated analytics for warnings about driving, vehicles, and fuel, proactive maintenance alerts to save

downtime, and designing driver management applications are all part of the solution.

## 12. Conclusion

Automobile manufacturers are redefining their manufacturing processes using manufacturing processes near production sites, AI-based automated diagnostics, big data to influence design and production, and human-machine interfaces. Machine intelligence and the Internet of Things are bolstering the demand for electrified and self-driving vehicles. New business models in shared vehicle ownership, analytics-driven maintenance, safety enhancements, and insurance are also possible. Furthermore, startups and growing businesses provide technologies that allow cars to safely communicate and trade over the internet. This report's Automotive Industry Trends & Startups just scratch the surface of the automotive trends we discovered throughout our extensive investigation. Hybrid vehicles, robots, and automotive sensor





technology, among other things, will alter the industry as we know it today, spotting new possibilities.

## References

1. [1].P. Guo, P. Liu, P. Guo, P. Liu, P. Liu, P. Liu, P. Liu, P. Liu (2010, October). China is doing research on the development of electric automobiles. 2010 International Conference on Future Information Technology and Management Engineering (FITME) (Vol. 1, pp. 94-96).IEEE.
2. [2]. L. Dickerman and J. Harrison, "A New Car, A New Grid," IEEE Power & Energy, Vol. 8, No. 2, pp. 55-58, March-April 2010.
3. [3] E. Ungar and K.Fell, "Plug in, Turn on, and Load up," IEEE Power & Energy, Vol.8, No. 3, May-June 2010, pp.30-35.
4. [4].K. V. Rupchand, K. V. Rupchand, K. V. Rupchand, K. V. (2011, July). A plan for fulfilling the power needs of India's electric car transportation. 2011 IEEE Power and Energy Society General Meeting (pp. 1-IEEE).