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ARTIFICIAL INTELLIGENCE, A BOON TO AUTOMOTIVE INDUSTRY

AI Everywhere

Artificial intelligence (AI) is the most sought and debated topic. It is being deployed all over the world and in businesses. The Automotive Industry, the most creative and innovation-hungry industry, is empirically exhibiting AI to enhance its innovation and constantly improve itself. When AI and automotive are paired, the first thought that springs to mind are self-driving vehicles, but there's more to it than that.

The manner AI is applied in the automobile sector is extensive as it has vast capabilities. AI is beneficial not just while driving a car but also in manufacturing. H-Vex is a robotic exoskeleton worn by personnel throughout the assembly process to protect and ease their way into performing various tedious assembly line work, which is made feasible by artificial intelligence. In 2018, it was used by KIA. The parking sensors are also deployed with AI to ease the process. AI is also assisting with repairs or adjustments through the cloud, negating the hassle of traveling all the way to service centres.

Ant Financial, a Chinese corporation, used an image categorization approach to introduce a new way of processing vehicle insurance. They used artificial intelligence to create an app that analyses photos of damaged and original parts to estimate repair costs and allow customers to claim.

The Indian automotive industry is likewise on its way to revamp itself by adopting artificial intelligence to advance in many ways. Revit's use of AI in production, MG Motor's introduction of connected vehicles, and Astor's Autonomous Level 2 technology are just a few examples of Indian automotive moving towards AI.

- G.V. Ashwith

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Impact of Blockchain Technology in the Automotive Sector

Since it was first introduced to the public ten years ago, blockchain technology has gone long. Blockchain, which was once envisioned as the backbone of a new electronic cash system, has grown into much more. Today, technology is seen as one of the pillars of a future digital economy, which can disrupt a wide range of corporations. One of the industries that might profit the most from the blockchain revolution is the automobile industry.

Critical issues in the automotive sector

Given the size and complexity of today's automotive industry, it's not unexpected that it's confronting several issues. Complex supply chains, vehicle dealership networks, and aftersales services are just a few of the factors that necessitate reliable processes and solutions to avoid failure. Fortunately, automakers now have a robust new tool in blockchain, which may help them decrease costs, streamline operations, and enhance supply chain management and accountability.

Manufacturing

The apparent advantage of adopting blockchain in production is its transparency, but a less evident one is that counterfeit concerns may be avoided. This is achievable since each car component has its unique identification number.

Financing

Another benefit of blockchain technology is that it is linked to national legislation. However, everywhere that cryptocurrencies may or may not be used to make payments, it is a significant benefit that should be considered.

Transfer of Ownership

This is where blockchain technology may make the process easier, possibly even eliminating the need for agents. Because of the high openness provided, changing automobile ownership is a breeze. Smart contracts may also be utilized to ensure that buyers and sellers have a simple time dealing with the selling process.

Conclusion

Automakers are continuously seeking new ways to use cutting-edge technology to their advantage, and the automotive sector has always been at the vanguard of technological innovation. After looking at a few different use cases for the technology, it is evident that blockchain in the automobile sector can provide significant benefits.

- Gaddam Shashank

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DATA ANALYTICS FUELLING AUTOMOTIVE INDUSTRY

CHANGING GEARS WITH ANALYTICS

Data analytics is now widely employed across a myriad of industries. When it comes to the automotive sector, there are no exceptions. The automobile sector is an example of unrivaled innovation and modern technologies. Data analytics ostensibly improved both the customer experience and expectations and connected and smartened the cars. When developing new products and marketing strategies, data analytics plays a significant role. As automobiles have connectivity, the sensor systems in them broadcast all critical data such as distance traveled and information about the car's components while in operation, allowing industries to get a sense of their next move. They can also provide increased safety and satisfaction with cognitive maintenance approaches aided by data analytics.

Tesla, too, used data analytics to overcome challenges in its early stages back in 2014. When automobiles overheated, for example, the company analyzed over 30,000 cars' performance data to find a solution. Tesla automobiles have proved to be smarter than conventional cars because of their data-driven technology. The use of data analytics to assimilate maps is a critical component of making autonomous vehicles a reality.

Data Analytics and its services in the automotive sector have been able to do the seemingly impossible.

Incorporating data analytics into the automotive industry has proven to be a wise decision thus far, as we can attest to its impact on the industry's ability to improve day by day. With the introduction of newer technology and intelligent data analytics into the system, the automotive industry will shift gears even more in the future to become much more innovative.

- G.V. Ashwith

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AIRBORNE TRANSFORMERS

Fiction to Reality!

Fiction tends to reality as humans continue to evolve advancements towards technology; we seem to take yesterday's dream and turn it into today's reality. The automobile sector



has been on an evolutionary stage since its establishment, conquering the scene of luxury and speed. Be it a space warping, time-traveling fictitious vision from the past set for the distant future as portrayed in "back to the future," the flying car is no longer a myth but a pleasant reality leaping towards advancements for the future.

The "AirCar" was created by Stefan Klien, whose vision aligns with EASA standards; it has been awarded a certificate of airworthiness by the Slovak Transport Authority. Equipped with a 1.6-liter Petrol BMW engine, the flying car can hit speeds amounting to over 100 mph and can cruise at an altitude of 8,000 ft. With over 70 hours of flight testing, the vehicle performed more than 200 takeoff and landing maneuvers symbolizing it to be an epitome of an engineering marvel which can convert itself from a road navigating vehicle into a high-speed flying aircraft in no more than 2 minutes and 15 seconds! This astonishing feat is followed by an upcoming creation of a prototype from the same creator claiming the successor to be more powerful and quick, enhancing the cruising ability to better this hybrid creation.

While the shimmering bubble of excitement towards this fascinating innovation does require a pilot's license to operate, it's nonetheless an avid leap towards the future of hybrid vehicles. With the doors open to mass production, this exciting niche will reach out far into the broader arrays and domains of the transportation industry. Thus, it opens fictitious domains such as "air-taxi" and converts them to a hardcore reality.

- *Krisharth Deepak Misra*

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ADDITIVE MANUFACTURING

AUTOMOTIVE INDUSTRY & 3D

ADDITIVE manufacturing (AM), often known as 3D printing, is a revolutionary method of manufacturing that allows for the manufacture of lighter, more robust components and systems. As the name indicates, additive manufacturing involves adding material to an item to produce it. Data computer-aided design (CAD) software or 3D object scanners guide machines to deposit material in exact geometric forms, layer by layer.

PRI NTI NG

Since its inception, 3D printing as a manufacturing process has seen remarkable widespread use in the automobile sector. It's no wonder that automakers are among the most enthusiastic about developing new applications and furthering technological development. After all, 3D printing is a game-changer for the industry, and the trend is for additive manufacturing to become more consolidated across all areas.

At the time, the technology allowed automotive businesses to create pieces that were pleasing to the eye. These parts, however, lacked the necessary strength and longevity. There was no doubt that technology had a long way to go. Nonetheless, as one of the first industries to see the promise of additive manufacturing, the automobile industry has played a critical role in speeding up the adoption of this innovative manufacturing process. The market's top companies have invested (and continue to support) a significant amount of time and money in additive technology research and development.

Additive manufacturing technologies are a crucial driver of competitiveness, and they will have a significant impact as a source of product innovation and a catalyst for supply chain change.

Reduced lead times, lower prices, and improved ergonomic designs are all advantages of additive manufacturing in the automotive industry. This collection of business examples demonstrates some of these advantages and explains how AM has influenced product development in the field.



R VARSHITHA REDDY

E VEHICLE PRODUCTION IN INDIA

IS INDIA READY FOR A TESLA?

IN INDIA the electric vehicle market is still relatively modest. Electric car sales have been stagnant at 2000 units per year for the past two years. India may tackle barriers to EV adoption in India from various angles, including technical issues, legislative issues, and a lack of infrastructure.

In Research and Development these are the few challenges:

Battery Cell: The battery cell is the fundamental component of the electric vehicle's battery pack. In electric cars, the batteries are the most expensive component. They are approximately half the price of electric vehicles. As a result, lowering the cost of batteries will reduce the cost of EVs.

Battery Management System (BMS): The circuitry that binds the cells of a battery pack together and continually monitors the state of each cell is known as the battery management system (BMS). BMS monitors each cell's temperature, charge-discharge state, and short circuit protection. Because the BMS is highly reliant on local meteorological conditions, India must create its own BMS rather than exporting it as it will meet the cost affordability of Indian customers.

Power Electronics:

Power electronics take various power conversion processes from the plug to the wheel.

Electric motors

Electric motors transform electrical energy into mechanical energy and drive electric vehicles. Electric motors also aid in regenerative braking, in which the motor functions as a generator, converting mechanical energy into electrical energy.

From the user's perspective, the four primary deterrents are the high upfront cost of EVs (mainly due to battery costs), long charging times, range anxiety, and a lack of charging infrastructure. India, a price-conscious market, would only adopt electric mobility if it proves to be as cost-effective and convenient as the present ICE car system.

The Indian government's latest measures and numerous incentives will aid in the country's e-mobility push. Government should plan electric motors and power electronics for Indian circumstances. A battery eco-system must be created to support many enterprises and start-ups working on battery packs and cell manufacture. To combat range anxiety, an appropriate charging infrastructure is required. Swapping possibilities should also be considered. It is also critical to generate demand by electrifying all government buses and providing tax breaks for private EV owners.

Indian Electric Automobile Compliancy

The strategic framework for India's expansive deployment of E-vehicles.

The advent of transportation has reached a fork in its road. It was posted in 2020, and it appears as we have almost reached the critical threshold concerning electric vehicles. Electrical Vehicles, also widely referred to as EVs, are invariably considered a component of said answer whenever fuel costs rise, or global warming is addressed or explored. These vehicles may still seem unpopular, notwithstanding numerous emerging Indian corporations accessing several segments of their Electric vehicles administration, considerable cash invested in this market, including sizeable implementation endeavors.

Electric vehicles' prevalence is at its exceptionally low at below 1 percent, amid its debut off devices from existing original equipment manufacturers as well as the newfound competitors. 2, 3, and even four-wheeled vehicles account for 18%, 78%, and 5% of all-electric mobility manufactured in India, correspondingly.

Among several primary factors underlying this slow penetration of electrical automobiles is a dearth of technological inventiveness. Corporations have thus long struggled to emphasize the overall feasibility of an electrical automobile for India's cost-conscious clientele. This vehicle's long-term viability wasn't really considered therefore, electric vehicles were unable to give sufficient mobility during interstate transportation. The absence of recharging facilities is widely regarded as the primary cause behind the reduced level of EV acceptance. Nevertheless, although it is among the constraints impeding the adoption, it is hardly the critical factor. Instead, regardless of the additional levied for these vehicles, the lack of consumer-oriented and compelling goods seems to remain the concern.

The promise of electrical transportation is at the point of fulfillment, with incumbent businesses catching pace while radical entrepreneurs emerge, opening the door towards a slew of new technologies. The occasion has arrived for the whole environment to hop on board this electrified juggernaut to accelerate its widespread implementation. Advancement in merchandise development will be increasingly crucial than establishing recharging infrastructures. Although four-wheelers have to evolve immensely concerning initial expenses and overall maintenance expense, two-wheelers seem to be the catalyst for large-scale acceptance. Although these are obstacles in terms of infrastructure and consumption, the potential of electromobility in India is optimistic, promising a somewhat more accessible, efficient, and sophisticated transportation scenario.

-Deepshika

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GOVERNMENT PLANS AND SUBSIDIES ON E-VEHICLES

According to a government proposal under consideration, all central government ministries and their field offices might switch to electric vehicles (EVs) over the next three years.

After India promised to reach net-zero emissions by 2070, the plan's implementation will bolster the government's green credentials. Fortunately, electric car prices are predicted to fall to match with internal combustion engine (ICE) automobiles by 2025.

In addition, the Centre has selected nine cities with populations of 4 million or more for fast EV adoption: Mumbai, Delhi, Bengaluru, Hyderabad, Ahmedabad, Chennai, Kolkata, Surat, and Pune.

ELECTRIC VEHICLE SCENE IN INDIA

According to the union minister, the FAME plan will be extended for another two years until March 31, 2024. The abbreviation FAME stands for "Faster Adoption and Manufacturing of Electric and Hybrid Vehicles." The FAME plan was introduced in 2019 to promote electric vehicles until 2022. The policy went into force on April 1, 2019, intending to accelerate the development and use of electric cars.

The budget for the FAME initiative was projected to be Rs.10,000 crores when it was started in 2019. The money was supposed to be used to purchase 7,090 electric buses, 35,000 four-wheelers, 500,000 three-wheelers, and one million two-wheelers by the government. The actuality, on the other hand, was completely different. The electric car subsidies could not close the pricing gap with combustion engine automobiles.

The union government has proposed additional incentives for two-wheeler electric vehicles and three-wheeler electric vehicles to encourage the usage of electric cars. Electric two-wheeler incentives have been increased by 50%, from Rs.10,000 per kWh to Rs.15,000 per kWh. India must develop appropriate regulations and investment portfolios to attract electric car manufacturers. In the country's framework, subsidies should be enhanced, and regulatory hurdles should be removed.

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Gaddam Shashank

PROGNOSTICATION OF INDIAN AUTOMOTIVE FINANCING TRENDS IN 2021-22

We were perusing the cogent movements in the automotive financing market with enduring reverberations.

The expanding tendency of powertrain minimization is expected to boost its worldwide automobile financing business. The engines diameter and valve count would've been reduced if turbojet engines or charging stations were installed. It could impact tremors and velocity, improving the vessel's audio experience. In comprehensive research named According to research analysis, the industry is expected to increase at a compound annual growth rate of 7% from 245.62 Billion dollars in 2021 to 385.42 Billion dollars in 2028. Around early 2021, it was valued at 248.10 billion dollars.

Within its initial quarterly of 2020, the coronavirus outbreak significantly impacted the automobile financing business: compact industrial automobiles and utility cars sold in large numbers this season. According to specific reports, compared to 2019, the market for secondhand automobiles fell approximately 1-2 percent in 2020, while the market for novel automobiles fell by 3-4 percent.

Virtual lending services remain the foremost technological innovations presently acquiring prominence in this field. Consumers may use various internet and smartphone applications to qualify for the credit, contrast them to similar organizations, and monitor them easily. Monetary institutions are making a concerted effort to expand into emerging nations recently. Consumers in those nations prefer to borrow money from nationalized banking firms instead of credit intermediaries. Nevertheless, because the sector already has several well-known organizations, additional entrants could find it challenging to break into the marketplace, which might slow the expansion of the automobile financing business in the coming foreseeable term.

- Deepshika

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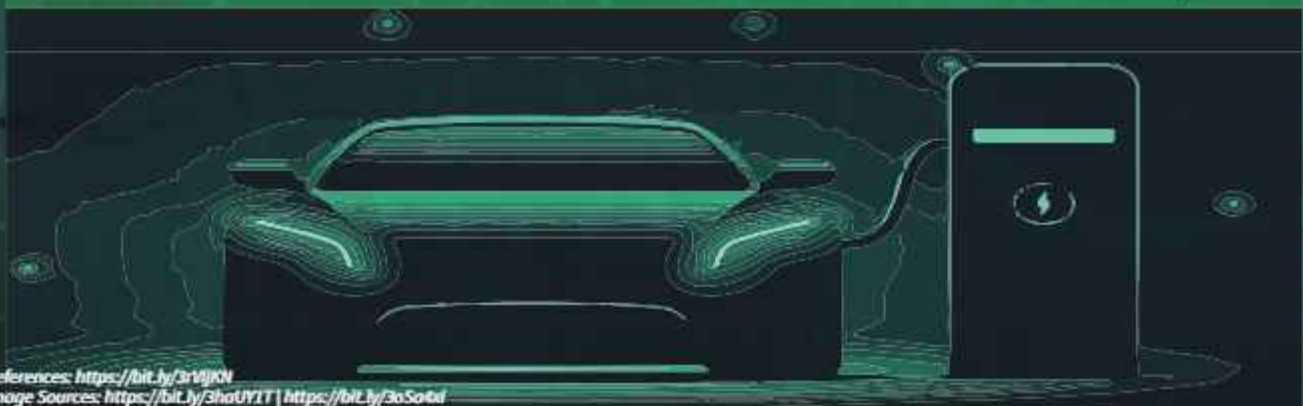
HIT OR A MISS? EV'S CHARGE TOWARDS THE FUTURE

A prudent sector of the technological market is the automobile industry which has recently switched its polarity towards electrical drivetrain. Electric vehicles ensue an evolutionary pattern with a promising future for the betterment of our environment and efficiently managing and reducing the emission of pollutants compared to conventional combustion engines.

However, the positive attributes that follow in favor of EVs, their usage, and adaptability have been unrushed in the Indian market. A diverse number of hurdles fall bestowed upon the domain of Electric vehicles. Its main constituent problem is an inadequate establishment of charging infrastructure in the country, which categorizes EV as an unworthy choice compared to the readily available fuel for its alternative, combustion engine vehicles. Electric Vehicles stand at a marginal 1% of the total vehicle sales in India, signifying dominance of the combustion engine vehicles, which directly points out the lack in the establishment of the electric vehicle market. Following the path enhanced by initiatives now from the government benefiting the consumers and buyers of the electric vehicle segment, it seems the absence of establishing a proper network for the EV's, including charging stations followed by mediocre support for the vehicles, buyers are yet to deem EV's as a convenient vehicle resulting in a scarce market share for this particular platform.

The automobile industry is crucial in the continuous evolution of its products, and electric vehicles (EVs) are without a doubt the sector's future. However, in our country, India, the establishment of electric cars will seem like a far-fetched idea unless a proper integration of the entire system dealing with the operation of such vehicles is installed and made readily available.

- Krisharth Deepak Misra



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