AI in Automative Industry

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When you think of Artificial Intelligence, does the "Automotive Industry" immediately spring to mind?

It is for sure, No. It is AI chatbots such as ChatGPT, Microsoft Bing Chat, or Google Bard because these are the most visible applications of AI that we are used to.
So, how relevant is Artificial Intelligence for the automotive industry?

Since AI as a technology disruptor and today's buzzword belongs to Industrial Revolution 4.0, let's roll back the discussion and first explore the impact of different industrial revolutions on automotive industry.

Automotive Industry has been a beneficiary of almost all the industrial revolutions.
While the automotive industry did not exist during the first Industrial revolution 1.0, the advancements and transformations brought about during this period through mechanization of production laid the groundwork for the development of the automobile industry later on.

First automobile saw light during Industrial revolution 2.0 with invention & development of internal combustion engine, electrification of factories and concept of mass production popularized by Henry Ford through assembly line techniques, leading to higher production rates and significantly lower costs.

Industrial revolution 3.0 furthered the development of automotive industry through automation of production.

What we are witnessing as Industrial revolution 4.0 in today's times is making automobile industry "smarter" in a considerable manner.

While Technologies such as the Internet of Things, Artificial Intelligence, Big Data, Cloud, and Cyber-physical systems are leaving a profound impact, Artificial Intelligence (AI) is making a significant impact on the automotive industry, revolutionizing various aspects of vehicle development, manufacturing, driving, and customer experience.

Could you imagine yourself, a decade ago, sitting at the back seat of car with no driver in driving seat and your car taking you safely to your destination on its own?
It would have looked like a dream or so but, thanks to AI, this is turning into reality.
However, AI in the automotive industry is not only changing the vehicles on the road, making them safer but the factories that produce them.

Scan the QR code on the left to see how AI is impacting across the automotive value chain.

Let's take a look at automotive value chain to understand how AI is transforming the industry:

#1 Manufacturing:
With the inclusion of Industry X and AI, manufacturing technologies have shifted to digital manufacturing. AI is revolutionizing the factories building intelligent cars. Companies like ABB, Rockwell Automation, and FANUC Robotics are integrating AI in their offerings to improve the welding, painting, assembly, and quality check processes.

#2 Design

Designing and development of cars has become much easier and faster. Feeding AI the vast amount of data collected from customers and markets has made customization of car design easier. This has ultimately reduced the time-to-market of new models and the costs.

Moreover, AI-powered simulations play a crucial role in assessing a vehicle's performance under various conditions, ensuring the safety and reliability of every model.

#3 Driver Assistance

Heard of ADAS – Advanced Driver Assistance System. AI is behind the ADAS, which helps in collision detection, adaptive cruise control, lane departure, and blind spot control in new-gen vehicles.

AI is also integrated into the infotainment systems offered by OEMs. Customizing the driving experience, music, and other media offerings based on customer moods are a few avenues for AI research.

Future of AI in Automotive industry:

AI is expected to play an even more prominent role in shaping the future of the automotive sector as new technologies and applications continue to emerge.

1.Vehicle to everything communication.

AI-powered V2X communication will enable vehicles to interact with other vehicles, infrastructure, and pedestrians, providing real-time information and improving overall traffic safety and efficiency.

2.Enhanced cybersecurity.

As vehicles become more connected and reliant on software, the importance of robust cybersecurity measures will increase. AI-driven security solutions can help protect vehicles from cyber threats, ensuring the safety and privacy of users.

3.AI-enabled manufacturing.

Using AI in automotive manufacturing can increase efficiency, reduce waste, and improve product quality. Examples are AI-powered automation, and quality control.

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