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# Generative AI in Automotive

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# The newest trend in the industry

In the past months, the world has been captivated by the new IT revolution, which is rapidly transforming our lives, jobs, and the way we interact with the internet - Generative AI. It has been made a commodity thanks to the OpenAI initiative of opening Chat-GPT 3 to the public.

Today we can see GenAI everywhere – writing articles, creating music, drawing pictures, generating videos. For creative industries, it sped up the work significantly. But at the same time, millions of articles we can find on the internet are written partially or fully by LLM, which makes finding the unique piece of information or solution progressively harder.

The biggest problem encountered while using LLMs is verifying and validating the results of their work. Chat-GPT lacks a self-verification feature, which means it can easily lie and defend that lie as it is not aware of it. This is very often called a hallucination of a chatbot, which can make up facts, dates, information, or people. That makes the human factor vitally important.

# Generative AI in automotive

Obviously, such a breakthrough in IT cannot omit the automotive industry, as it's now very much software-defined and software-dependent. All major companies announced in one way or another the introduction of Generative AI in their workflow – starting from vehicle design, through infotainment systems, and ending with aftersales processes.

## GenAI's Impact in Automotive

### — Economic Projections

According to Precedence Research, the market for GenAI in the automotive industry is expected to generate an impressive \$2700 million in annual revenue by 2032. (1)

### — Consumer Engagement

The research also indicates that 75% of regular users of in-car voice assistants have responded positively to the integration of GenAI capabilities, showcasing the technology's acceptance and potential to enhance the user experience. (2)

### — Cost and Time Savings

Secondary analysis by Precedence Research suggests that the usage of generative AI in the automotive parts sector may result in a 10–20% decrease in the cost and time of developing new car systems and components. (1)

We can now see, in real examples of enterprises in different industries, that Generative AI can save millions of dollars by automating and improving internal and customer-facing business processes. In every department, we are finding new use cases that can benefit from the integration of Generative AI systems.

In this eBook, we will guide you through how Generative AI works internally, helping you think strategically about its capabilities. In further chapters, we will discuss the hottest possible use cases in the automotive industry right now and finally the risks and challenges that must be considered while integrating LLMs in the enterprise.

<sup>1</sup> SOURCE: [www.precedenceresearch.com](http://www.precedenceresearch.com)

<sup>2</sup> SOURCE: [www.soundhound.com](http://www.soundhound.com)

# Short introduction to Generative AI

Generative AI refers to the field of artificial intelligence focused on learning data patterns and creating new, derived content. This includes text, images, videos, music, motion, and more. The breadth of generative AI spans from assisting with simple automated tasks to handling complex creative processes.

The main idea is to generate new knowledge based on the vast amount of knowledge stored internally, which is way beyond the capacity of any human being. This information is merged, transferred, and altered in a way that produces creative or nearly creative

outcomes. In some cases, the results need to be converted to a different format. For example, a common approach for controlling robots by Generative AI is to generate text/actions and then convert them to executed functions.

Although LLM text generation is the most commonly used application today, it's worth exploring all the possibilities before focusing solely on Large Language Models.

What follows is a breakdown of some key applications of Generative AI and examples of tools in the field.



<b>Generative AI Applications</b>	<b>Description</b>	<b>Indicative Examples</b>
<b>Text Generation</b>	Leveraging LLMs for creating text across various applications.	OpenAI's GPT-4, Jasper
<b>Image and Video Generation</b>	Combining human creativity with AI for art and practical design purposes.	DALL-E, Midjourney, Adobe Firefly, Stable Diffusion
<b>Code Generation</b>	Assisting in software development by generating code, creating tests, suggesting architectures, tools, or frameworks.	GitHub Copilot, Gemini Advanced/AlphaCode, OpenAI Codex/ChatGPT, Tabnine
<b>Scheduling, Audio, Motion, Robotics</b>	Expanding the LLM application range to schedule planning and robot control, with varied inputs such as audio, video, images and motion capture.	OpenAI Whisper, OpenAI Sora, LEO, ProgPrompt, MotionGPT
<b>Chatbots</b>	Providing a wide array of chatbot services for diverse tasks, from support in software development to enterprise project analysis.	OpenAI Chat-GPT, Anthropic Claude, Google Gemini, Llama 2, BERT

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automotive industry  
players use Generative  
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