ince its release, ChatGPT has burst into the public consciousness and is seemingly incredible in its abilities: It can write essays, code, even poems on topics like what Robert Bosch would have thought about AI. It sounds almost too good to be true, as if this new type of AI models could relieve humans of many daily tasks and create new freedoms in the working world. But not all that glitters is gold – with all the possibilities that ChatGPT offers, also come risks. Associates at Bosch naturally have more than a few questions: How does a system like this work? Can you use these systems for work, and what are the legal implications of doing so? How can Bosch leverage and use these tools?

This article aims to provide the basics about ChatGPT, its opportunities, and pitfalls, and is a starting point in a multi-part series on the topic of generative AI. There are also contact persons to address when it comes to real use cases.

**What is ChatGPT?**

Following the public debate around ChatGPT, the tool is assigned a variety of descriptions: better search engine, humanoid chatbot, smart assistant, curse or blessing. Looking at the topic from a scientific perspective, ChatGPT can be considered an instance of two emerging trends in AI: **Generative AI** and **Foundation Models**. Models based on Generative AI aim to create new data, for example, paint pictures, write code, generate videos or speech. Foundation Models, on the other hand, refer to AI models that are pre-trained on truly massive volumes of data, usually internet-scale, and then “prompted” to solve individual tasks without the lengthy re-training process usually associated with machine learning. ChatGPT is an instance of both such classes of models and demonstrates the power of these emerging paradigms.

Numerous Bosch units and divisions have recognized the potential of Generative AI and especially ChatGPT. They want to learn more about the benefits and use cases of the technology and need strong partners at their side. Given the fascinating potentials, the AI community at [Corporate Research (CR)](https://inside-ws.bosch.com/FIRSTspiritWeb/permlink/wcms_c_-prep_cr_startpage-EN) has been working on Generative AI and ChatGPT for many years. The community already knows a lot about their potential, but also about the pitfalls they bring. The technology also has strategic and operational potential for the [Bosch Digital (BD)](https://inside-ws.bosch.com/FIRSTspiritWeb/permlink/wcms_bd_-bd_start_page-EN) portfolio. Against this background, CR and BD expert teams are joining forces to focus on technologies as well as relevant business models around them. This includes collecting potential Bosch use cases, evaluating them, and putting them into practice. Business models also consider legal and compliance aspects as well as choosing the best-in-class technologies.

[](https://bzo.bosch.com/bzo/media/bnn/boschgroup/2023_3/ALDI_Bosch_28092022-0025.jpg)

**How ChatGPT works**

ChatGPT is an instance of what is known as a large language model. The system works, somewhat amazingly, by predicting text one word at a time. When you type a prompt into ChatGPT, such as:

"Write an essay on the future of industrial automation."

The system will try to predict which word is *most likely* to come after the prompt. To do so, it uses a model trained on (essentially) all the text data from the internet. For example, in a reasonable document, the most likely word to follow the above sentence would be “Industrial” because it is an essay on industrial automation. Then, ChatGPT simply adds this word to its “prompt”, resulting in the new phrase:

"Write an essay on the future of industrial automation. Industrial"

which will result in “automation”. Repeat this process enough times, and you will receive a continuous text.

It is difficult to overstate how amazing it is that this process works to produce such fluent text, even technical outputs like programming tasks. There is no database backing the text or code that ChatGPT writes; it is not programmed to manually handle different types of questions. ChatGPT just produces text one word at a time, which for accurate enough models results in amazingly coherent output. There are other details to how ChatGPT was developed, but the core of the method is exactly as described above.

**The Pitfalls of Generative AI and recommendations for its use**

Despite these surprising abilities of such tools, there are several well-known drawbacks that must be considered when evaluating the use of Generative AI. Remember, the goal of ChatGPT is to generate the most probable sequence of words: It does not have any judgement on the content as such.

**Data Security.** When entering data into a web-based generative AI tool, there is a risk that transmitted information is not adequately protected by the tool's provider. Especially when interacting with Generative AI using personal data, for example, requirements of the EU-GDPR must be observed. The consumer versions of ChatGPT and similar tools do not offer adequate protection with regard to data protection law at the moment.

**Copyright.** Since tools like ChatGPT (basically) rely on data from the internet, their output could contain copyrighted material or be considered a copy of such, which could lead tocopyright infringements. New results of Generative AI can (so far) not be claimed by users as copyright holders.

**False information.** Generative AI can produce results that are inaccurate, incomplete, or simply not true. When using AI-generated information, it is up to humans to verify and validate it. Using unverified results in products or services could make them unsecure or deficient.

**Conclusions from these risks**

• The use of Generative AI in general should be aligned with the responsible C/LS lawyer. For data protection please contact your responsible DSO. • Information should only be transferred to the provider of Generative AI after a thorough check regarding confidentiality obligations and reliability of the provider. • Each result of Generative AI should only be used after an adequate check regarding correctness (e.g., quality tests) and IP (e.g., scanning tools for code). The details of this checks depend on the use case.

Finding a way to deal with these risks is not easy – creating a commercial and legal framework takes time. Many companies therefore ban the use of AI tools like ChatGPT straight away. At Bosch, however, we want to be able to exploit the potential of Generative AI for our business and thus remain competitive. [Bosch Legal Services (C/LS)](https://inside-ws.bosch.com/FIRSTspiritWeb/permlink/wcms_corpfunc_-c_ls_4-EN) has analyzed the legal situation and offers in an initial assessment with further recommendations on the [IT Law Blog](https://connect.bosch.com/blogs/dc69f949-9682-4ea5-a0a9-0532990a5538/entry/Legal_Rsisk_and_Implications_of_Using_AI_Models_Bosch?lang=de_de) which will gradually be expanded into a helpful guidance.

[](https://bzo.bosch.com/bzo/media/bnn/boschgroup/2023_3/Depositphotos_148118065_XL.jpg)

**ChatGPT at Bosch**

Currently, the use of publicly available tools to create code is prohibited at Bosch for the reasons explained above. Nevertheless, the technology advancements and accompanying business opportunities of Generative AI are too compelling to ignore. Generative AI promises increased productivity, improved products, new business models, automation of existing processes, and relief for employees. A commercial and legally reliable framework offers the opportunity to reap these benefits without posing a risk on our customers or our IT infrastructure. This will enable associates to focus on the benefits, while the framework is created in a joint effort of central departments, Corporate Research, and Bosch Digital.

Bosch Digital (BD) and Corporate Research (CR) are coordinating the effort to advance the use of Generative AI and Foundation Models at Bosch. [Sascha Sambale](https://connect.bosch.com/profiles/html/profileView.do?key=7431a0cf-de8e-46f5-bd3e-49d7284cdfba#&tabinst=Updates) (project lead at BD) and [Christian Daniel](https://connect.bosch.com/profiles/html/profileView.do?key=27012698-ab67-4544-820c-a40c13c749fd#&tabinst=Updates) (AI research portfolio lead at CR) coordinate this project, supported by team members from all relevant divisions. They evaluate, for example, suitable use cases, commercial offers for users within Bosch, and the integration of existing and new technologies. For instance, a private Bosch OpenAI ChatGPT functionality will shortly be available in Microsoft Azure and integrated into the [Bosch Chatbot Suite](https://connect.bosch.com/communities/service/html/communitystart?communityUuid=26d72eb2-b9c2-4053-a935-ec02db422e81). Generative AI can also provide tools that help with software development tasks, such as generating entire code fragments, documentation, wizards that explain, simplify, improve, and rewrite code according to style guides, and even check code for errors and security vulnerabilities.

The research on creating Bosch-owned solutions and applications with Generative AI and Foundation Models is carried out in the CR research portfolio “AI Methods”, led by Christian Daniel and Chief Expert [Zico Kolter](https://connect.bosch.com/profiles/html/profileView.do?key=8c53c050-95ff-44cf-9537-e4c7db18649f#&tabinst=Updates). These efforts are moving forward quickly, and within the next months, the first tools will be available to use and experiment with.

Generative AI and Foundation Models are the future of AI. Experts from CR and BD are committed to providing this technology in a way that clarifies the correct usage patterns, relevant use cases, and risk profiles so that all associates can benefit from the technology while avoiding its dangers. Or, as Robert Bosch might think:

[](https://bzo.bosch.com/bzo/media/en/bnn/divisions/cr/Beispiel_ChatGPT_Gedicht.jpg)

Would you like to join and contribute? Do you have questions? Then our new Community is the perfect place to exchange ideas with the experts. [Just join in](https://connect.bosch.com/forums/html/threadTopic?id=276493d0-5178-4dac-9acd-867c50e0a609) and share your thoughts.