

# The Future of Artificial Intelligence: What you need to know about GPT-3

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## Abstract

Artificial Intelligence (AI) has the potential to change the world in ways we can barely imagine. The AI industry is constantly evolving and developing new techniques to make artificial intelligence more user friendly, accessible, and applicable in everyday life. As a result of this, we have seen the emergence of numerous sub-disciplines within AI, each with their own unique focus and principles. One such sub-discipline is Pre-Trained Transformers. This article will shed light on the GPT-3, its recent advancements, and how these innovations are likely to affect society in the near future.

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## Introduction

### What is GPT-3?

A neural network machine learning model called GPT-3, or the third generation Generative Pre-trained Transformer, was developed to produce any kind of text from internet data. It was created by OpenAI and only needs a tiny quantity of text as an input to produce vast volumes of intelligently generated text. It produces artificial intelligence (AI)-written content that has the potential to be virtually identical to human-written sentences, paragraphs, articles, short novels, dialogue, lyrics, and more. Robots won't rule the planet, I assure you (not yet anyway). Nevertheless, with the help of the Generative Pre-trained Transformer 3 (GPT-3), they are well on their way to producing digital literature that is on par with—and in some cases even exceeds—the quality of human writers. GPT-3 has been in the news since last summer, and entire startups have been founded on its technology. To avoid getting caught up in the hype around GPT-3 and treating it as a magic box that can cure any issue, it's crucial to understand what GPT-3 actually is and how it functions.

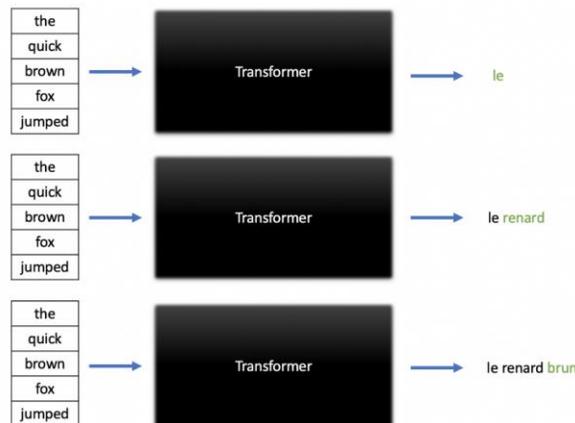
### How does GPT-3 work

A language model, such as GPT-3, is a statistical software that forecasts the likely arrangement of words. GPT-3 has been trained on a sizable dataset (from sources including Common Crawl, Wikipedia, and more) and has heard millions of conversations. It can determine which word (or even character) should come next in relation to the words around it.

Dataset	# Tokens (Billions)
Total	499
Common Crawl (filtered by quality)	410
WebText2	19
Books1	12
Books2	55
Wikipedia	3

GPT-3 will begin predicting what would naturally follow when you put in an initial set of words, such as "go to the store to buy..." would most likely predict something like: Milk, Cheese, Bread, Vegetables, etc.

GPT-3 is essentially a transformer model at its core. Transformer models are deep learning models that can generate a text sequence from an input sequence. These models are made for text generation jobs like automatic translation, text summarization, and question-and-answer activities. As seen in the graphic below, a transformer model iteratively creates a translation in French from an English input sequence.



A transformer iteratively predicts the next word in machine translation tasks. Image by the author.

Transformer models work differently from LSTMs by utilising a number of attention blocks to determine which portions of a text sequence should receive the most attention. A single transformer may contain numerous distinct attention blocks that each learn different facets of language, from named entities to different sections of speech.

GPT-3 is unique in that it can react intelligently to very little input. This is referred to as "few-shot learning" because after lengthy training on billions of parameters, it now only requires a few numbers of cues or examples to carry out the particular task you require.

For instance, after studying tens of thousands of poems and poets, you can type in a poet's name and GPT-3 will produce an original poem in that poet's style. GPT-3 creates a new poem by imitating the texture, rhythm, genre, cadence, vocabulary, and style of the poet's earlier works.

Instead of being downloaded, GPT-3 operates as a cloud-based LMaas (language-mode-as-a-service) service. By turning GPT-3 into an API, OpenAI aims to more securely limit access and implement rollback features in the event that malicious actors compromise the technology.

### Possible Applications of GPT-3

GPT-3 offers a range of potential uses in the real world. It's fascinating what they've already discovered, and developers and organizations are only starting to experiment with the potential use cases. Here are some ways in which GPT-3 is altering communication.

**Semantic Search:** GPT-3 can be useful if you're looking for more pertinent search results or an answer to a question. GPT-3's broad knowledge can be used to swiftly and accurately respond to complicated natural-language queries as opposed to simple keyword matching.

**Chatbots:** Rather than having chatbots that behave like, well, bots, giving them the tools, they need to communicate effectively and intelligently would change the way chatbots work. GPT-3-powered AI agents can have more fruitful dialogues with your consumers, whether you need to provide them answers, recommendations, or advise.

**Generating content:** GPT-3 can help you with anything from creative writing to educational content to adventure-based games, product pages, or lyrics for your upcoming punk song. It's not an API you should use to make material at will, but with some basic training, it can produce some passable original works. Even yet, it always requires a thorough edit to fact-check and weed out the most wildly divergent views it can produce.

**Achieve better productivity:** You may improve your job and polish everything from your emails to your code by using GPT-3. Gmail, for instance, suggests responses and automatically complete your words. Additionally, GPT-3 can be used to summarize longer articles or to provide feedback on what you've written. The OpenAI API can even complete code and offer context-aware suggestions after being fine-tuned from tens of thousands of open-source GitHub repositories.

**Translator:** Conversations can be translated using the GPT-3 API, and users can even talk in their preferred language. This gives businesses the ability to create more complex chatbots that can communicate with a wide range of customers and translate information for various sources. GPT-3 can be a great backup checker for confirming translations, even if you might not want to use it as your only translator.

### Limitations of GPT-3

Although GPT-3 is the biggest and arguably most potent language model at the time this article was written, it has its own drawbacks. In actuality, no matter how powerful, every machine learning model has some drawbacks. A few of the GPT-3's drawbacks that are detailed below:

**GPT-3 lacks long-term memory** unlike humans, it is unable to learn from repeated interactions.

**Lack of interpretability** is a general issue with excessively large and complicated systems. Given the size of GPT-3, it is challenging to comprehend or explain the results that it generates.

**Limited Input Size:** Transformers have a predetermined maximum input size, which means that the length of a prompt that GPT-3 can handle is limited to a few phrases.

**Slow Inference Time:** GPT-3 is so big, it requires extra time for the model to produce predictions. Slow inference time.

**GPT-3 has bias:** All models, including GPT-3, are only as good as the data that was used to train them. For instance, a study shows that GPT-3 and other sophisticated language models have anti-Muslim bias.

Despite its strength, GPT-3 still has flaws that prevent it from being a flawless language model or a representation of artificial general intelligence (AGI).

### Conclusion

GPT-3 has drawn a lot of interest because it is the biggest and, perhaps, the most potent language model developed as of the time of this article's publication. GPT-3 is still in its early stages and far from being a flawless language model or an illustration of AGI, due to a number of flaws.

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