# Artificial Intelligence Overview

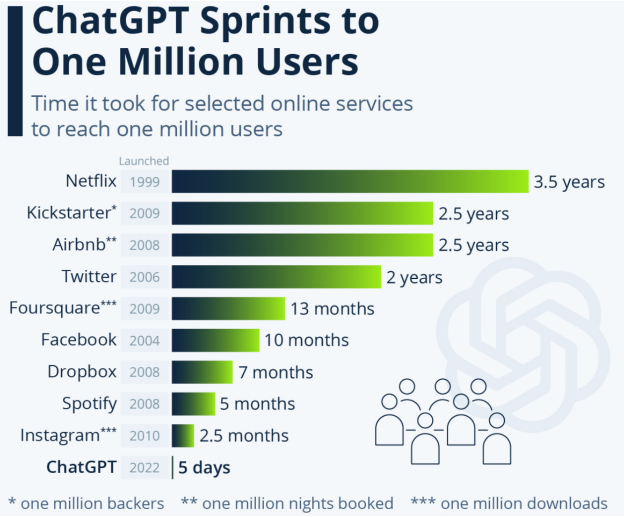
GTSF Investments Committee | Feb 21, 2023

Jiarui Wenl, Macro Senior Analyst

## ChatGPT: Origination and Business Model

ChatGPT is a chatbot based on Natural Language Processing (NLP) model developed by OpenAI, in which GPT stands for Generative Pre-trained Transformer. The model is pre-trained on a large corpus of text data using unsupervised learning techniques. OpenAI was founded in December 2015 by Sam Altman, Greg Brockman, Elon Musk, Ilya Sutskever, John Schulman, and Wojciech Zaremba, aiming to battle in the development of Artificial General Intelligence (AGI) with Google's DeepMind. The company was initially founded as a non-profit lab but then started building up valuation under Sam Altman's lead. The early investors and donors include Vinod Khosla, the Sun Microsystems cofounder, and Elon Musk.

In 2021, OpenAI diluted its shares in a $14 billion tender offer and brought three venture capital firms, Tiger Global, Sequoia Capital, and Andreessen Horowitz, into operation. In November 2022, right before a new round of financing from Microsoft, OpenAI published ChatGPT. By far, Microsoft has invested $13 billion into OpenAI, including three separate investments of $1, $2, and $10 billion. According to Fortune, Microsoft will be entitled 75% of OpenAI's profits until repayment of $13 billion is made and then step down to capture 49% of OpenAI's profits until Microsoft earns a $92 billion profit. Moreover, Microsoft is able to achieve synergy from OpenAI in its Azure services and Bing search engine. OpenAI's revenue sources are licensing GPT-3, Codex, and DALLE, subscription to ChatGPT Plus, partnerships and collaborations with other companies and organizations, and investment earnings from OpenAI Startup Fund.




| Other Venture-Backed AI Cos. | |
|---|---|
| **Jasper** - Copyrighting software $1.5b valuation | **Stability AI** - Text-to-image generator $1b valuation in 1st round |
| **Cohere AI** - GPT models | **Tome** - Narratives creation |
| **Prisma Labs** - Lensa App stable diffusion | **Midjourney** - Text-to-image generator |
| **Profluent Bio** - Protein creation | **Bard** - Google's LaMDA model |

## Artificial Intelligence in Business

Artificial Narrow Intelligence (ANI) or weak AI has already been widely implemented in industries such as healthcare, finance, and manufacturing to increase efficiency, reduce costs and improve outcomes. However, strong AI or Artificial General Intelligence's (AGI) impact on business remains largely unknown since AGI is not yet fully developed. ChatGPT, displaying some AGI characteristics, may serve as a touchstone of AGI. Its applications in the business world still focus on improving customer experiences and streamlining operations.

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## Artificial Intelligence Ethics

This section may or may not contribute to investment decisions in the near future. However, as the iteration of Artificial Intelligence accelerates, it is worth establishing an understanding of the ethical paradox behind the scenes.

The key to judging the intelligence of an AI is the presence of self-consciousness. Consciousness is the cognitive ability that includes awareness of external objects. Self-awareness, on the other hand, refers to the internal perception of self-identification and emotions. Moreover, emotions have long been a criterion for distinguishing humans from programs. In 1995, MIT professor Rosalyn Pickard introduced the concept of Affective Computing, which develops systems and devices that can recognize and interpret. Prior to the publication of ChatGPT and Bard, programs could only recognize human emotions with relative accuracy through reinforcement learning and other means of training methods.

Nevertheless, does a program that recognizes and responds to human emotion possess emotion? From a functional point of view, it does possess the characteristics of emotion. However, this ability to perceive emotions is a programmed response developed over numerous training sessions. However, the perception of subjectivity is not included in this process. In other words, programs' perception of emotion is stuck in the infant stage of human cognition development without self-awareness. Similarly, in his Chinese Room argument, John Rogers Searle, a philosophy professor at US Berkeley, demonstrates that programs are simply following ‘execution orders’ and are unconscious. He argues that even if programs could functionally surpass human thought, they lack subjective purposefulness and still cannot be considered intelligent. Following John Searle's line of research back to its essence, Ludwig Wittgenstein divides the appearance of intelligence from its nature. Parsing a human discourse does not mean that the discourse is consciously understood as human language. Similarly, demonstrating emotion recognition does not mean an AI possesses emotion and self-awareness.

However, contemporary iterations of AI models, such as ChatGPT and Bard, are based on available Internet content. Although the data sets were not published, ChatGPT is believed to use up all text data available on the internet by 2026. In other words, the information these models will access covers all human intellectual, emotional, and self-awareness development aspects. Therefore, the degree of subjectivity of AI consciousness remains a paradox since it does not exhibit any difference from a human. Suppose a program has access to all data since the birth of humanity or even the universe. Could the consciousness it acquires after programming the data, although without purpose, be equivalent to or even surpasses the so-called human consciousness? ChatGPT, based on the November 2022 version of the GPT-3.5 model, addressed 17 of 20 Theory of Mind tests on the ability to attribute mental states to others and is extremely important for social functioning, putting the model on par with the performance of 9-year-olds. Michal Kosinski, associate professor of organizational behavior at Stanford University, says this ability "may be due to the model's improved language skills emerged spontaneously."

"I think the good case (for AI) is just so unbelievably good that you sound like a crazy person talking about it. I think the worst case is LIGHTS-OUT FOR ALL OF US," said Sam Altman, the CEO of OpenAI. How AI will transform the world is still left to question.

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