

# OpenAI and the Large Language Model Market

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In April 2023, Sam Altman, CEO of OpenAI, found himself at a crucial juncture. With the tremendous success of OpenAI's GPT-4 language model, the company garnered global recognition and accelerated the development of the large language model (LLM) market. As Altman sat in his office, he pondered the next strategic move for OpenAI in this rapidly evolving landscape.

Sam Altman, a seasoned entrepreneur and investor, became the CEO of OpenAI in March 2019. He had previously served as the president of the technology startup accelerator Y Combinator and had invested in several high-profile companies. Under his leadership, OpenAI had managed to release multiple iterations of its groundbreaking language models.

Most of the key issues that Altman needed to address revolved around the future of OpenAI's business model and business strategy in the LLM market. He had to consider the entire LLM value chain, from chip making to cloud computing, the models themselves, the applications, and, finally, the end users. These considerations included the following:

1. The evolving landscape of the LLM market and competitive dynamics within the industry.
2. The potential implications of the shifting economics of chip manufacturing and cloud computing on OpenAI's strategy.
3. The role of OpenAI in fostering an ecosystem of application development based on its LLMs.
4. The importance of ethical considerations and potential regulatory challenges in the LLM market.
5. Balancing the pursuit of a profitable business model with OpenAI's mission to ensure that artificial general intelligence (AGI) benefits all humanity.

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6. The challenge of talent acquisition and retention when it comes to avoiding the brain drain of top researchers and experts in the face of fierce competition.

As OpenAI's CEO, Sam Altman had to navigate these complex issues and devise a comprehensive strategy that would allow the company to maintain its competitive edge while continuing to drive innovation and create value for its customers and stakeholders. His decisions would have far-reaching implications for the company's future and the development of the LLM market.

## History of OpenAI<sup>1</sup>

OpenAI was founded in December 2015 by a group of visionaries and technology leaders, including Elon Musk, Sam Altman, Ilya Sutskever, Greg Brockman, John Schulman, and Wojciech Zaremba. Each founder brought unique skills and experiences to the organization. Although Elon Musk and Sam Altman provided overall strategic guidance and funding, Greg Brockman, Ilya Sutskever, John Schulman, and Wojciech Zaremba focused on the technical and research aspects of the organization. The organization was motivated by a shared desire to advance AGI<sup>2</sup> research in a manner that prioritized a benefit to humanity above all else. OpenAI's mission was to ensure that AGI, once achieved, would serve as a common good, with its advantages accessible to all, rather than being monopolized by a select few.

To accomplish this ambitious mission, the founding team crafted the OpenAI Charter<sup>3</sup>, a document outlining the core principles that would steer the organization's actions and decision making:

1. Broadly distributed benefits: OpenAI would be committed to using its influence to ensure that AGI was used for the benefit of all and avoid enabling uses of artificial intelligence (AI) that could harm humanity or unduly concentrate power.
2. Long-term safety: The organization pledged to conduct research to make AGI safe and promote the adoption of safety research across the AI community.
3. Technical leadership: OpenAI aimed to stay at the cutting edge of AI capabilities to effectively address AGI's societal impact.
4. Cooperative orientation: OpenAI would actively cooperate with other research and policy institutions, striving to create a global community working together to address AGI's challenges.

With the OpenAI Charter as their North Star, the founders established OpenAI as a cutting-edge research laboratory focusing on long-term safety research and active promotion of a cooperative global community working toward AGI. Over the years, OpenAI has made significant contributions to the AI research community, publishing numerous groundbreaking research papers and providing open-source tools and platforms to foster collaboration and innovation.

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<sup>1</sup> The information in this section is mostly from Wikipedia and Taskade, <https://en.wikipedia.org/wiki/OpenAI> and <https://www.taskade.com/blog/openai-chatgpt-history/> (accessed 2023-04-10).

<sup>2</sup> AGI refers to artificial intelligence that is, in general, more intelligent than humans.

<sup>3</sup> <https://openai.com/charter> (accessed 2023-04-11).



However, it was the successful launch of their generative pretrained transformer (GPT) series of language models that truly catapulted OpenAI into the global limelight. The GPT models demonstrated unprecedented capabilities in natural language understanding and generation, which showed the potential to revolutionize various industries and applications. These achievements not only pushed the boundaries of AI capabilities, but they also sparked essential ethical, economic, and regulatory discussions surrounding the development and deployment of LLMs.

Recognizing the increasing need for resources to continue groundbreaking research and development, OpenAI transitioned from its initial nonprofit structure to a for-profit model, known as the “capped-profit” model, in March 2019:

The fundamental idea of OpenAI LP is that investors and employees can get a capped return if we succeed at our mission, which allows us to raise investment capital and attract employees with startup-like equity. However, any returns beyond that amount—and if we are successful, we expect to generate orders of magnitude more value than we’d owe to people who invest in or work at OpenAI LP—are owned by the original OpenAI Nonprofit entity.<sup>4</sup>

The company then announced a partnership with Microsoft, including a \$1 billion investment by Microsoft into OpenAI,<sup>5</sup> where OpenAI would use specially designed computers on Microsoft Azure to train its algorithms and Microsoft would become a preferred partner for commercializing OpenAI’s products. About half of the investment was estimated to be in the form of credits for the use of Azure cloud services.<sup>6</sup> This change allowed the organization to attract external funding, scale its efforts, and pursue commercial opportunities, all while maintaining its core mission of ensuring that AGI benefits all humanity. As part of this transition, Sam Altman, a cofounder and renowned entrepreneur, took on the role of CEO, guiding OpenAI through its next phase of growth and navigating the complex landscape of the rapidly evolving AI and LLM industry.

## Large Language Models<sup>7</sup>

LLMs represented a groundbreaking development in AI and natural language processing (NLP). These models, which were built using deep learning techniques, can understand and generate human-like texts by leveraging vast amounts of textual data from diverse sources.

LLMs found applications across a wide array of industries, including content generation, translation, summarization, question-and-answering systems, and even sentiment analysis. These models significantly impacted how businesses and organizations interact with data, automate tasks, and engage with customers. However, the rise of LLMs also raised various concerns regarding ethical implications, such as the potential for misuse, the amplification of biases present in the training data, and the environmental impact of their energy-intensive training process. As a result, the development and deployment of LLMs became the subject of intense scrutiny and debate, with researchers, developers, and policymakers working together to establish guidelines and best practices to maximize their benefits while mitigating potential risks.

<sup>4</sup> <https://openai.com/blog/openai-lp> (accessed 2023-04-16)

<sup>5</sup> <https://news.microsoft.com/2019/07/22/openai-forms-exclusive-computing-partnership-with-microsoft-to-build-new-azure-ai-supercomputing-technologies/> (accessed 2023-04-16)

<sup>6</sup> <https://techcrunch.com/2023/01/23/microsoft-invests-billions-more-dollars-in-openai-extends-partnership> (accessed 2023-04-16)

<sup>7</sup> See the **Appendix** for more details on what AI is and how the training works.