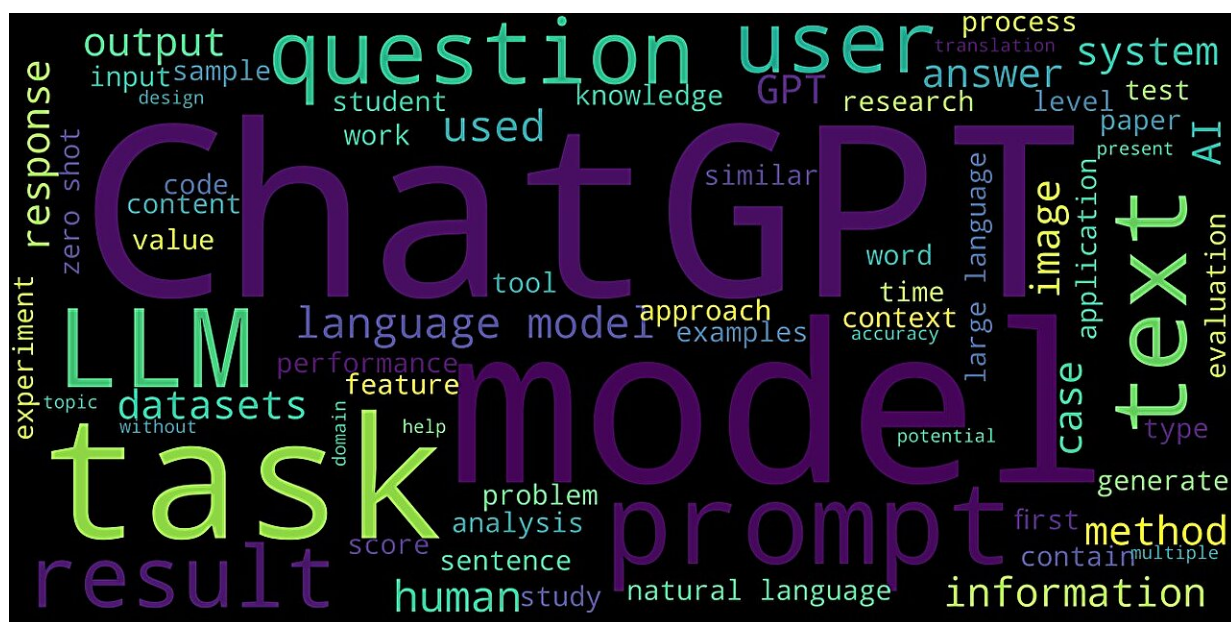


# A comprehensive survey of ChatGPT and its applications across domains

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Word cloud of all articles analyzed in this review. Credit: Yiheng Liu

Recent advancements in natural language processing (NLP) have ushered in a new era with the emergence of powerful language models, most notably the Generative Pretrained Transformer (GPT) series, which includes substantial language models such as ChatGPT (GPT-3.5 and GPT-4).

These models undergo extensive pre-training on vast textual data, and

their capability is evident in their exceptional performance across a broad spectrum of NLP tasks, including language translation, text summarization, and question-answering. Notably, ChatGPT has demonstrated its potential across various domains, spanning education, health care, reasoning, text generation, human-machine interaction, and [scientific research](#), to name just a few.

In line with this emerging and noteworthy trend, a team of researchers in China has undertaken a thorough analysis of research papers centered around ChatGPT. As of April 1st, 2023, a total of 194 papers referencing ChatGPT were identified on the *arXiv* preprint server.

The team's study encompassed a comprehensive trend analysis of these papers, resulting in the creation of a word cloud to visually depict the frequently used terminology. Additionally, they delved into the distribution of these papers across diverse fields, presenting statistical insights.

Moreover, their efforts extended to a comprehensive review of the existing literature on ChatGPT.

"Our review spans various dimensions, including an exploration of ChatGPT's manifold applications, a thorough consideration of the ethical implications associated with its use, an evaluation of its capabilities, and an examination of its inherent limitations," explains lead author Bao Ge.

The team's findings indicate a rapid increase in interest in NLP models, showcasing their substantial potential across various domains.

"Nonetheless, it is essential to acknowledge the valid concerns surrounding biased or harmful content generation, privacy infringements and the potential for technology misuse," Ge emphasizes. Mitigating these concerns and establishing a framework for the responsible and

ethical development and deployment of ChatGPT stands as a paramount priority."

The research is published in the journal *Meta-Radiology*.

**More information:** Yiheng Liu et al, Summary of ChatGPT-Related research and perspective towards the future of large language models, *Meta-Radiology* (2023). [DOI: 10.1016/j.metrad.2023.100017](https://doi.org/10.1016/j.metrad.2023.100017)

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