

Lesson 02 Demo 09

Streamlining Literature Surveys on LLM Impact with Consensus GPT

Objective: To leverage *Consensus* GPT for conducting a comprehensive literature survey on the impact of Large Language Models (LLMs) on natural language understanding (NLU) tasks

Tools required: Consensus

Prerequisites: ChatGPT – 4

Steps to be followed:

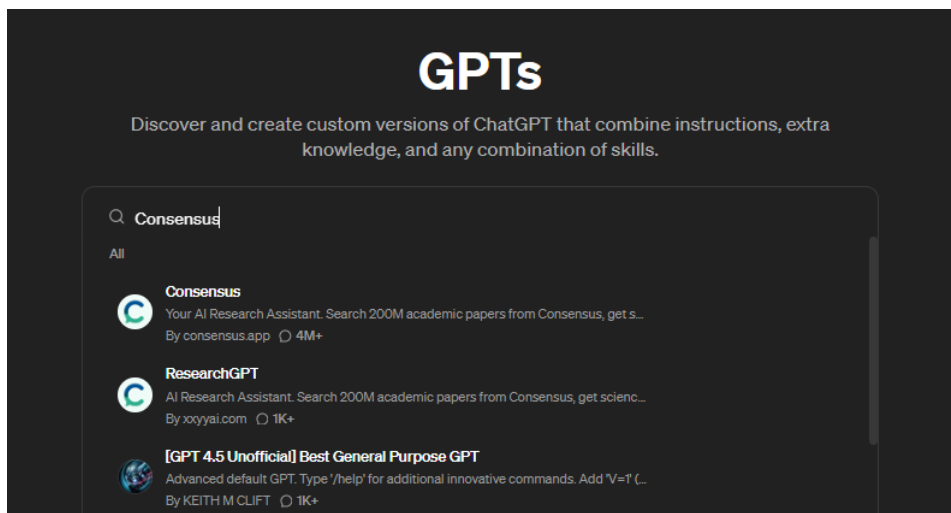
1. Log in to ChatGPT
2. Navigate to ExploreGPTs and search for 'Consensus' GPT
3. Copy the scenario and prompt provided below, and paste it into *Consensus* GPT
4. Observe the response

Step 1: Log in to ChatGPT

To proceed with your tasks, visit the official website and either sign up for a new account or log in to your existing ChatGPT account.

<https://chat.openai.com/>

Step 2: After logging into ChatGPT-4, click on ExploreGPTs and search for Consensus GPT



Step 3: Copy the scenario and prompt provided below and paste it into the Consensus GPT

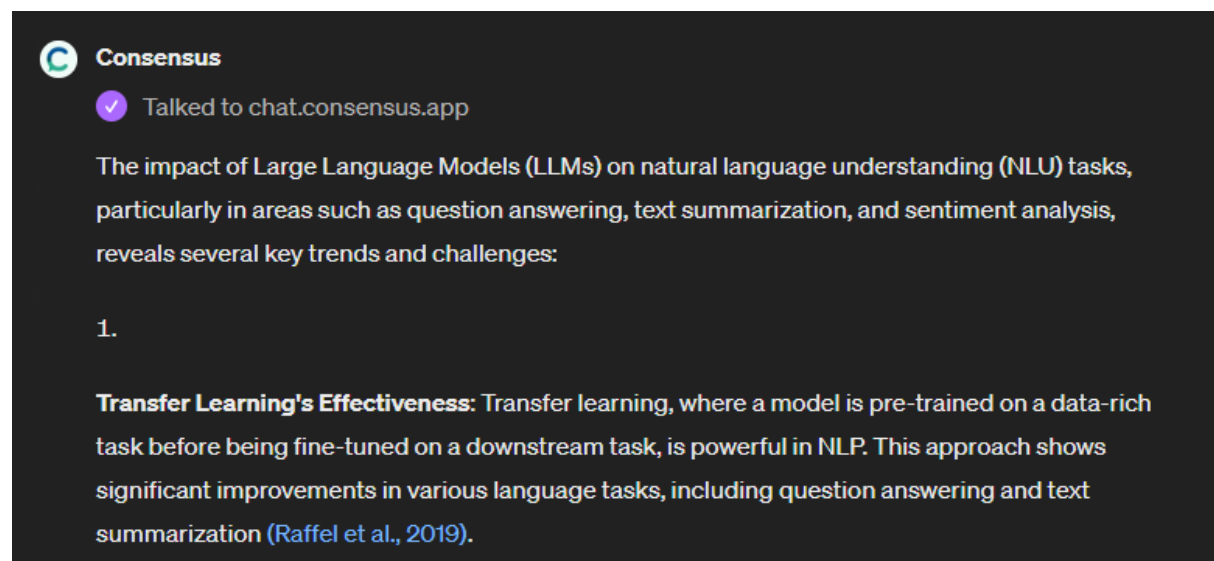
Scenario:

A researcher is conducting a literature survey on the impact of large language models (LLMs) on natural language understanding (NLU) tasks. They aim to gather and analyze recent studies that explore the advancements in LLMs, particularly in areas such as question answering, text summarization, and sentiment analysis. The researcher intends to identify key trends, challenges, and potential future directions. They also plan to highlight the role of fine-tuning and transfer learning in enhancing the performance of LLMs on various NLU tasks.

Prompt:

Conduct a literature survey on the impact of large language models on natural language understanding tasks. Focus on recent studies that explore advancements in question answering, text summarization, and sentiment analysis. Analyze the key trends and challenges in the field and discuss the role of fine-tuning and transfer learning in improving LLM performance on NLU tasks. Provide a summary of your findings, highlighting potential future directions for research in this area.

Step 4: Observe the response



The screenshot displays the Consensus GPT interface. At the top, there is a green circular icon with a white 'C' and the word 'Consensus' in bold. Below this, a purple checkmark icon is followed by the text 'Talked to chat.consensus.app'. The main content area shows a response to the prompt. It begins with 'The impact of Large Language Models (LLMs) on natural language understanding (NLU) tasks, particularly in areas such as question answering, text summarization, and sentiment analysis, reveals several key trends and challenges:'. This is followed by a numbered list starting with '1.'. Below the list, there is a bolded section header 'Transfer Learning's Effectiveness:' followed by a paragraph explaining that transfer learning, where a model is pre-trained on a data-rich task before being fine-tuned on a downstream task, is powerful in NLP. It states that this approach shows significant improvements in various language tasks, including question answering and text summarization, and cites '(Raffel et al., 2019)'.

Consensus

✓ Talked to chat.consensus.app

The impact of Large Language Models (LLMs) on natural language understanding (NLU) tasks, particularly in areas such as question answering, text summarization, and sentiment analysis, reveals several key trends and challenges:

- 1.

Transfer Learning's Effectiveness: Transfer learning, where a model is pre-trained on a data-rich task before being fine-tuned on a downstream task, is powerful in NLP. This approach shows significant improvements in various language tasks, including question answering and text summarization (Raffel et al., 2019).

2.

Advancements in Paraphrasing: LLMs like GPT-2, when fine-tuned, show high-quality results in tasks like text classification, sentiment analysis, and question answering. These models are capable of generating paraphrases for longer spans of text (Witteveen & Andrews, 2019).

3.

Self-Knowledge in LLMs: LLMs exhibit a degree of self-knowledge, particularly in identifying unanswerable or unknowable questions. This aspect is crucial for improving their utility in NLU tasks. Enhancements like in-context learning and instruction tuning can further boost this capability (Yin et al., 2023).

4.

Challenges in Accurate Factual Knowledge: Despite advancements, LLMs still struggle with accurately incorporating factual knowledge, which is vital for tasks like question answering. The reliance on implicit knowledge storage in parameters leads to inaccuracies or obsolete information, marking a critical bottleneck for trustworthy AI (Hu et al., 2023).

5.

Improved Sentiment Analysis via Transfer Learning: Transfer learning, specifically the ULMFiT algorithm, shows impressive performance in sentiment analysis for languages like Spanish. This indicates the potential of fine-tuning in enhancing LLM capabilities across various languages and tasks (Palomino & Ochoa Luna, 2019).

6.

Future Research Directions: Unifying LLMs with structured knowledge models like Knowledge Graphs is a promising direction. This integration can enhance LLMs by providing external knowledge for inference, thereby overcoming their limitations in capturing factual knowledge (Pan et al., 2023).

In conclusion, LLMs have significantly advanced NLU tasks, with transfer learning and fine-tuning playing crucial roles in their success. However, challenges remain in ensuring factual accuracy and broadening their understanding across diverse languages and domains. Future research can focus on integrating structured knowledge sources and exploring novel fine-tuning techniques.