

# Sentiment Analysis in the Era of Large Language Models: A Reality Check

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## Abstract

Sentiment analysis (SA) has been a long-standing research area in natural language processing. With the recent advent of large language models (LLMs), there is great potential for their employment on SA problems. However, the extent to which current LLMs can be leveraged for different sentiment analysis tasks remains unclear. This paper aims to provide a comprehensive investigation into the capabilities of LLMs in performing various sentiment analysis tasks, from conventional sentiment classification to aspect-based sentiment analysis and multifaceted analysis of subjective texts. We evaluate performance across 13 tasks on 26 datasets and compare the results against small language models (SLMs) trained on domain-specific datasets. Our study reveals that while LLMs demonstrate satisfactory performance in simpler tasks, they lag behind in more complex tasks requiring a deeper understanding of specific sentiment phenomena or structured sentiment information. However, LLMs significantly outperform SLMs in few-shot learning settings, suggesting their potential when annotation resources are limited. We also highlight the limitations of current evaluation practices in assessing LLMs' SA abilities and propose a novel benchmark, SENTIEVAL, for a more comprehensive and realistic evaluation. Data and code are available at <https://github.com/AlibabaResearch/DAMO-NLP-Research>.

opinions, sentiments, emotions, etc., through computational methods (Liu, 2015; Poria et al., 2020). Since its inception (Turney, 2002; Hu and Liu, 2004), this field has attracted significant interest from both academia and industry given its wide range of applications, such as analyzing product reviews and gaining insights from social media posts (Barbieri et al., 2020; Zhang et al., 2022). Furthermore, achieving a deep understanding of human subjective feeling through sentiment analysis is undoubtedly an important step toward developing artificial general intelligence (Bubeck et al., 2023).

In recent years, large language models (LLMs) have demonstrated impressive performance on various NLP tasks (Brown et al., 2020; Chowdhery et al., 2022; OpenAI, 2023, inter alia). They can directly perform tasks in zero-shot or few-shot in-context learning manner and achieve strong performance without the need for any in-domain supervised training (Bang et al., 2023; Ye et al., 2023; Zhong et al., 2023; Yang et al., 2023). Although there have been some initial attempts to apply LLMs to sentiment analysis (Deng et al., 2023; Zhong et al., 2023; Wang et al., 2023), these studies are often limited to some specific tasks and adopt different models, datasets, and settings in experiments. As such, the extent to which existing large language models can be leveraged for sentiment

# Sentiment Of Reality

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