

Sentiment Analysis Using Generative Artificial Intelligence: A Comprehensive Framework for Enhanced Emotional Understanding

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Abstract:

Opinion mining, a field of NLP, generates computational studies of people's opinions, sentiments, emotions, and attitudes from texts. Due to the increased generation of user content through online reviews, social media, and forums, sentiment analysis has become an essential source for organizations to uncover useful insights from enormous amounts of unstructured text data. This paper proposes leveraging Generative AI (GenAI) in sentiment analysis by improving its NLP capabilities. Accordingly, sentiment analysis, instead of sticking to mere polarity classification, can capture deeper nuances of emotion, sarcasm, intent, and even tone by drawing on the contextual understanding provided by large language models (LLMs) such as GPT. This project explores how GenAI can be integrated into sentiment analysis frameworks to deliver improvements in precision, sensitivity to context, and adaptability in applications such as real-time customer feedback evaluation, brand monitoring, and mental state estimation. In addition, the study investigates the performance of GenAI-based sentiment analysis compared to traditional machine learning techniques regarding accuracy, interpretability, and multilingual adaptability. The research thereby aims to add value to the development of intelligent emotionally aware systems that would better understand human language and behavior across a wide scope of domains.

Keywords:

Generative AI, Sentiment Analysis, Large Language Models, Natural Language Processing, Emotion Detection, Context-Aware Systems.