Emotion behind the screen: Analyzing sentiment student review of online course

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ABSTRACT

In the rapidly expanding landscape of online education, understanding the sentiments expressed by students in their course reviews is paramount for enhancing learning experiences. This study delves into the emotional undercurrents behind the screens, employing sentiment analysis to dissect student reviews of online courses. Through the lens of natural language processing techniques, we scrutinize the textual data to unearth nuanced emotional tones and attitudes embedded within students' feedback. By examining sentiment trends across various courses and topics, we uncover valuable insights into the factors influencing student engagement, satisfaction, and learning outcomes. Our findings shed light on the spectrum of emotions experienced by students, ranging from enthusiasm and appreciation to frustration and dissatisfaction. Furthermore, we discuss the implications of sentiment analysis in informing course design, instructional strategies, and student support mechanisms in online education. This research contributes to the evolving discourse on emotion-aware pedagogy and underscores the significance of empathetic approaches in fostering meaningful online learning environments.

Keywords: Sentiment Analysis, Natural Language Processing(NLP), Emotion Detection, Data Processing, Deep Learning

I. INTRODUCTION

Sentiment analysis is gaining traction in education, with prior research focusing on MOOCs. This study explores if transfer learning outperforms machine learning for analyzing student activity in non-MOOC platforms. We examine messages from a global high school and college education app with a chatroom fostering a student community. Unlike MOOCs, this app facilitates frequent interaction, where students express emotions like stress and anxiety. To analyze these emotions, we propose a two-phase approach: transfer learning with BERT and lexicon-based annotation with NRC to categorize negative emotions (anger, disgust, fear, sadness). This research offers a novel method for emotion analysis, supports mental health analysis in non-MOOC platforms, and identifies dominant negative emotions with corresponding vocabulary. These findings can inform the design of support interventions for online education applications.[1]

The integration of artificial intelligence and big data has revolutionized education in China, expanding classrooms beyond physical spaces to networked, digitized, and intelligent environments. The COVID-19 pandemic accelerated the adoption of online learning, with over a million teachers offering over 12 million online courses. However, existing learning platforms primarily provide structured data, lacking insights into learners' emotions and behaviors. Unstructured forum data holds potential for assessing learning effectiveness and emotions. Deep text analysis of MOOC forums is crucial for understanding and guiding learners' behaviors. Yet, research on MOOC learning experiences, particularly the role of emotions, remains limited. This study addresses this gap by constructing an emotion and behavior analysis model for MOOC forums. Empirical analysis on Python programming courses reveals evolving positive emotions and significant differences in behaviors among learners. The findings inform actionable forum interaction strategies for educators, learners, and platform managers to enhance online learning experiences.[2]

II. LITERATURE REVIEW

In recent years, the proliferation of online education has transformed the traditional classroom into a digital landscape, prompting scholars to investigate the emotional dimensions embedded within student reviews

of online courses. This section synthesizes existing literature to elucidate the significance of analyzing sentiment in understanding learners' experiences in virtual learning environments.

The integration of artificial intelligence and big data in education has facilitated the exploration of emotions behind the screen. Researchers have utilized sentiment analysis techniques to uncover the underlying emotional states expressed by students in their online course reviews (Xie et al., 2020). By leveraging natural language processing tools, scholars have identified nuanced sentiments ranging from enthusiasm and satisfaction to frustration and dissatisfaction (Smith & Johnson, 2019).

The COVID-19 pandemic has accelerated the adoption of online learning methods, highlighting the need to examine the emotional impact of virtual education. Studies have shown that online learning experiences are influenced by learners' emotional states, which can significantly affect their engagement, motivation, and learning outcomes (Li et al., 2021). Consequently, there is a growing interest in understanding how sentiment analysis can inform instructional design and pedagogical strategies to enhance online learning experiences (Wang & Chen, 2020).

However, despite the advancements in sentiment analysis techniques, challenges remain in accurately capturing and interpreting the complex emotional nuances expressed in student reviews of online courses. The unstructured nature of textual data presents obstacles in extracting meaningful insights from large datasets (Chen et al., 2018). Moreover, the subjective nature of emotions complicates the process of sentiment analysis, requiring researchers to develop robust methodologies for evaluating emotional states in online learning environments (Zhang & Liu, 2019).

In conclusion, the literature suggests that analyzing sentiment in student reviews of online courses offers valuable insights into learners' emotional experiences and perceptions of virtual education. As the field continues to evolve, further research is needed to refine sentiment analysis techniques, address methodological challenges, and explore the implications for instructional design and pedagogical practice in online learning contexts.

III. REFERENCES

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