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Enhancing Social Media Analysis with Visual Data Analytics: A Deep Learning Approach

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Abstract

In this article, a visual data analytics framework to enhance social media research using deep learning models is proposed. Drawing on the literature of information systems and marketing, complemented with data-driven methods, we propose a number of visual and textual content features including complexity, similarity, and consistency measures that can play important roles in the persuasiveness of social media content. We then employ state-of-the-art machine learning approaches such as deep learning and text mining to operationalize these new content features in a scalable and systematic manner. The newly developed features are validated against human coders on Amazon Mechanical Turk. Furthermore, two case studies with a large social media dataset from Tumblr are conducted to show the effectiveness of the proposed content features. The first case study demonstrates that both theoretically motivated and data-driven features significantly improve the model's power to predict the popularity of a post, and the second highlights the relationships between content features and consumer evaluations of the corresponding posts. The proposed research framework illustrates how deep learning methods can enhance the analysis of unstructured visual and textual data for social media research.