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# Sentiment Analysis of Drug Reviews

The analysis of user reviews in the healthcare domain is gaining increasing importance, as it provides valuable insights into the perceived effectiveness and tolerability of medications. At the same time, with growing model complexity, the question arises whether resource-intensive deep learning methods offer a justified added value compared to traditional machine learning approaches.

The aim of this study is to comparatively investigate both approaches in the context of sentiment analysis of drug reviews. The analysis is based on a comprehensive dataset containing textual reviews and numerical ratings on a scale from 1 to 10. To derive the target variable, the ratings are transformed into three sentiment classes, where values from 1 to 3 are classified as negative, 4 to 6 as neutral, and 7 to 10 as positive. For the subsequent text classification, traditional methods such as logistic regression and support vector machines, as well as deep learning models particularly recurrent neural networks and transformer-based architectures are implemented. In addition to predictive performance, training time, model complexity, and energy consumption are systematically analyzed. Furthermore, this study contributes to the goals of the United Nations in the area of good health and well-being by demonstrating how data-driven analyses of drug reviews can improve patient information and support treatment decisions. At the same time, in line with sustainable consumption and production patterns, it examines to what extent the use of energy-intensive deep learning models is resource-efficient and responsible relative to their benefits.

The results aim to provide a sound basis for selecting appropriate methods in the context of sentiment analysis and to contribute in particular to the evaluation of the sustainability of modern machine learning approaches.