



Using Recurrent Neural Networks to Analyze Social Media user Behaviour: A Case Study Tiktok

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Introduction

Tiktok represents one of the most influential platforms that transformed human communication and interaction because of the emergence of social media. Researchers and marketers and legislators who want to analyze content engagement along with sentiment trends and user activities on Tiktok need full understanding of user behavior on this platform. The paper examines how Recurrent Neural Networks (RNNs) study Tiktok user behavior because of their ability to interpret sequential information and detect temporal patterns. The research efforts concentrate on user involvement forecasting as well as emotion processing alongside trend pattern discovery and influential figure detection and exceptional case recognition. The research develops prediction models through RNNs particularly LSTM and GRU to forecast user interactions based on historical data behavior. The methodology relies on API data collection from TikHub followed by preprocessing step extraction and RNN-based model training to evaluate like counts alongside comments and shares and play activity observation. RNNs demonstrate clear capabilities in tracking user preference changes while simultaneously computing viral content trends through results from this research. The study provides valuable information that helps organizations perfect their marketing strategies and allows social media companies to develop better user interfaces. The article addresses moral dilemmas in behavioral analysis together with matters regarding personal data protection and model verification. The ability of RNNs to disclose complex social behavior patterns and lead digital communication choices has developed social media analytics through machine learning applications.

Materials and methods/Methodology.

The study uses Recurrent Neural Networks (RNNs), specifically LSTMs, to analyze user behavior on social media, preferring direct API access for more structured and diverse insights. The model is trained and evaluated using standard data splitting methods, with performance measured through success rates and F1 scores. This approach helps predict user behavior across platforms and enhances understanding of social media usage, offering valuable insights for academic research and effective social media strategies

Results and discussion

The system uses a Recurrent Neural Network (RNN) to analyze social media user behavior by identifying patterns in interactions like posts, likes, and comments. RNNs are well-suited for processing the sequential data social platforms generate. Data is collected via APIs, preprocessed, and transformed using word embeddings. The model predicts future user behaviors such as engagement trends and sentiment changes. A dashboard displays insights for marketing and content strategy, while the system continuously improves through real-time feedback.

Conclusions

The approach enhances academic knowledge in machine learning and social media analytics while offering practical business solutions. By turning raw data into actionable insights, it helps businesses optimize social media strategies and make informed, data-driven decisions.

Keywords: TikTok, Recurrent Neural Networks, Machine Learning, Sentiment Analysis, Predictive Modeling