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Constructing a User-Centered Fake News Detection Model Using Classification Algorithms in Machine Learning

Synopsis

A novel fake news detection model is developed by integrating user characteristics, news content, and social network features to enhance detection accuracy. Various classification algorithms, including Logistic Regression (LR), Random Forest (RF), Support Vector Machine (SVM), Neural Network (NNET), and Classification and Regression Trees (CART), are applied to assess their performance. Using XGBoost for feature selection, the Random Forest model achieves a detection accuracy of 94%, proving highly effective in combating fake news.

Overview

As fake news spreads rapidly on social media, there is a growing need for effective detection systems that go beyond content-based approaches. Incorporating user behavior, news content, and social network features into detection models helps improve their accuracy. The integration of machine learning techniques, especially through classification algorithms, allows for a comprehensive approach that captures various aspects influencing the spread of misinformation. Feature selection, particularly using the XGBoost algorithm, plays a key role in identifying which factors are most relevant in improving the accuracy of detection models.

Five classification algorithms were tested, with Random Forest emerging as the most accurate, achieving 94% prediction accuracy, followed by Neural Networks at 92.1%. This performance evaluation highlights the potential of Random Forest in fake news detection. The combination of diverse features from user data, social networks, and content enables the model to better combat fake news dissemination. These advancements offer a robust solution to mitigating the growing threat of misinformation on social media platforms.

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