



PROJECT REPORT
FAKE NEWS CLASSIFICATION AND INFLUENCER
IDENTIFICATION ON TWITTER USING CONVOLUTIONAL
NEURAL NETWORK AND SOCIAL NETWORK ANALYSIS

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ABSTRACT (ABSTRACT TITLE)

The rapid growth of social media, especially Twitter, has increased the speed of information sharing, but it has also made the spread of misinformation and hoaxes more frequent. This issue often occurs due to users tend to read and share content without verifying its credibility, leading to confusion among the public. Previous studies have proposed various machine learning and deep learning methods for fake news detection, but most of them focus only on textual content and ignore the impact of user interactions in spreading information. Therefore, this study proposes a hybrid approach that combines Convolutional Neural Network (CNN) and Social Network Analysis (SNA). The CNN model is used to classify textual data using GloVe word embeddings for capturing semantic features from the ISOT Fake News dataset, which consists of 44,898 labeled news articles. The dataset is then divided into training (90%), validation (5%), and testing (5%) sets. In addition, SNA is also applied to analyze user interaction networks from the RumorDetection dataset using centrality measures such as degree, betweenness, and closeness to identify influential users involved in the spread of hoaxes. The results show that the CNN model achieves an accuracy of 96%, outperforming K-Nearest Neighbors and Logistic Regression models, in confusion matrix and evaluation metrics. Furthermore, SNA successfully identifies key actors in the network structures that contributed to misinformation spread. These results indicate that by combining CNN and SNA provides a more comprehensive and effective approach for fake news detection and analysis in social media.

Key words: fake news detection, convolutional neural network, social network analysis, Twitter