

Real-Time Fake News Detection Using Machine Learning

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Abstract: *In the era of rising digital media, fake news has been constituting grave risk factors to public opinion, democracy and trust on authentic sources. This work tackles the problem with sequence-based deep learning and standard NLP, training LSTM, stacked LSTM, and bidirectional LSTM models on the WELFake corpus of labeled real and fake articles. All inputs pass through a consistent preparation stage—cleaning, removal of common stopwords, stemming or lemmatization as appropriate, tokenization, and padding—so the models see stable, comparable sequences. In side-by-side tests with classical baselines such as Naive Bayes and Logistic Regression, the bidirectional LSTM delivered stronger accuracy, while the best overall results came from pairing Word2Vec embeddings with an LSTM. For day-to-day use, a small Flask web app lets users submit individual headlines or stream live items via APIs, and the service returns a label with a confidence score. By combining robust deep learning with a simple interface, the platform offers an efficient, near real-time aid for countering misinformation.*

Keywords: Fake News Detection, Deep Learning, Natural Language Processing (NLP), LSTM, Bidirectional LSTM, Stacked LSTM, Transfer Learning, Word2Vec, Text Classification, Flask Web Application

