

# Integrating Metaheuristics and Two-Tiered Classification for Enhanced Fake News Detection with Feature Optimization

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## Abstract

**INTRODUCTION:** The challenge of distributing false information continues despite the significant impact of social media on opinions. The suggested framework, which is a metaheuristic method, is presented in this research to detect bogus news. Employing a hybrid metaheuristic RDAVA methodology coupled with Bi-LSTM, the method leverages African Vulture Optimizer and Red Deer Optimizer.

**OBJECTIVES:** The objective of this study is to assess the effectiveness of the suggested model in identifying false material on social media by employing social network analysis tools to combat disinformation.

**METHODS:** Employing the data sets from BuzzFeed, FakeNewsNet, and ISOT, the suggested model is implemented on the MATLAB Platform and acquires high accuracy rates of 97% on FakeNewsNet and 98% on BuzzFeed and ISOT. A comparative study with current models demonstrates its superiority.

**RESULTS:** Outperforming previous models with 98% and 97% accuracy on BuzzFeed/ISOT and FakeNewsNet, respectively, the suggested model shows remarkable performance.

**CONCLUSION:** The proposed strategy shows promise in addressing the problem of false information on social media in the modern day by effectively countering fake news. Its incorporation of social network analysis methods and metaheuristic methodologies makes it a powerful instrument for identifying false news.

**Keywords:** RNN, RBM, Fake News Detection, Bi-LSTM, Red Deer Optimization (RDO), African Vulture Optimization Algorithm (AVOA)

Received on 08 February 2024, accepted on 02 April 2024, published on 03 April 2024

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doi: 10.4108/ectsis.5069

## 1. Introduction

The proliferation of false news on social media will severely impact every domain. The social media platform should facilitate the identification scheme that distinguishes fake news from original data. As we know, social media relies on the Internet, but before the Internet was even a thing, there were hoaxes and fake news [1] [2]. Fake news on the Internet is generally defined as "fictitious stories that have been

purposefully created to deceive readers." To promote reading or as a kind of psychological warfare, news organizations and social media sites disseminate false information. However, distinguishing fake and genuine data from social media platforms is highly complicated due to the exponential proliferation of information [3] [4] [5]. As a result, social media is now contaminated with fake data; therefore, a requirement is to develop a highly efficient model to detect fake news from social media sites.

The detection model faces severe complications due to a lack of tagged data identifying fake news [6]. Fake news can be

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