International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 09 Issue: 05 | May - 2025 SJIF Rating: 8.586 ISSN: 2582-3930

Identification Of Fake News

Prof. Mr. Ramkrishna H. Patil*[1], Utkarsha Bhushan Sanap*[2], Vedant Subhash Pawar*[3],
Hemant Leeladhar Jangir*[4], Janhavi Pravin Patil*[5], Apurva Yogesh Patil*[6]
*1 Guide, Assistant Professor, Department Of Computer Engineering, SSBT's College of Engineering & Technology, Bambhori, Jalgaon, Maharashtra, India.
*2,3,4,5,6 Students, Department Of Computer Engineering, SSBT's College of Engineering & Technology, Bambhori, Jalgaon, Maharashtra, India.

ABSTRACT

We are developing an AI-based web application called **Kavach News**, designed to identify and verify the authenticity of online news articles. This system aims to combat the widespread issue of misinformation by allowing users to input news URLs or headlines, which are then analyzed in real-time using Natural Language Processing (NLP) and machine learning algorithms. The app will scrape news content, perform linguistic and sentiment analysis, cross-verify with trusted sources using APIs like Google News, and generate a credibility score for each article. Based on the credibility score, the system will classify the news as **Real** or **Fake**.
The platform will feature user-friendly submission forms, quick verification results, and detailed credibility reports. Additionally, it will offer mobile-friendly interfaces, send real-time alerts for suspicious news, and support multi-language inputs. Future updates will include multimedia content verification and explainable AI-based decision support. The overall objective is to provide a fast, reliable, and accessible solution to help users distinguish between true and false information online.

Keywords: Fake News Detection, NLP, Machine Learning, Real-Time Verification, Source Credibility

I. INTRODUCTION

In the digital era, the rapid spread of fake news has become a serious global concern, impacting public opinion, politics, and social harmony. Traditional fact-checking methods are often too slow to keep up with the viral nature of misinformation. To address this challenge, we have developed **Kavach News**, an AI-based real-time news verification system. By combining Natural Language Processing (NLP), web scraping, and machine learning techniques, the system analyzes news content, checks credibility through trusted sources, and classifies it as Real or Fake. The aim is to empower users with a fast and reliable tool to combat misinformation and promote informed decision-making.

II. METHODOLOGY

The proposed methodology for fake news detection using the Kavach News system is illustrated in Figure 1. The process consists of five major stages: data acquisition, content extraction, preprocessing, verification, and classification.

I. News Data Acquisition

News articles are collected either by direct user input (URL or headline) or from datasets such as Fake News Net and LIAR. These articles are pre-labeled as real or fake for model evaluation and system testing.

II. Content Extraction

Quick-Scraper API is utilized to fetch the main article body, title, and metadata from the provided URL. This step ensures that only meaningful news content is processed for analysis.

III. Text Preprocessing

The extracted news content is preprocessed using Natural Language Processing (NLP) techniques such as:

- Tokenization
- TF-IDF vectorization
- Stop word removal
- Sentiment analysis

These operations transform the unstructured news text into feature vectors suitable for machine learning models.

IV. Source Verification and Similarity Matching

The system performs source verification by fetching similar articles from trusted media sources through the Google News API. A cosine similarity score is calculated to compare the input news with authentic articles, measuring credibility.

V. Credibility Scoring and Classification

A final credibility score is computed based on the linguistic features and similarity matching. Based on this score, the news is classified as Real or Fake.

The system's performance is evaluated using metrics such as accuracy, precision, recall, F1-score, and average response time**.**

III. MODELING AND ANALYSIS

Materials and Tools Used

- **Dataset:**

News articles were sourced from publicly available datasets such as Fake News Net and LIAR. These datasets contain labeled real and fake news, closely representing real-world scenarios.

- **Software:**

○ Frontend: React.js for building user interfaces.
○ Backend: Node.js with Express.js for handling server-side operations.
○ Libraries:
▪ Natural Language Toolkit (NLTK) for text preprocessing
▪ Scikit-learn for feature extraction and classification
▪ Axios for API communication
▪ Quick-Scraper API for news content extraction
▪ Google News API for source verification

- **Hardware:**

○ Intel Core i5 processor
○ 4 GB RAM
○ CPU – 2.0 GHz or faster

Algorithm: Kavach News Real-Time Fake News Detection

- **Input Layer:** Accepts news URL or manually entered text.
- **Content Extraction:** Quick-Scraper API fetches article body, title, and metadata.
- **Text Preprocessing:**

○ Tokenization
○ TF-IDF vectorization
○ Sentiment analysis

- Source Verification: Related articles are fetched using Google News API.
- **Similarity Analysis:** Cosine similarity is computed to match user article with trusted articles.
- **Credibility Scoring:** Linguistic and similarity features are aggregated to calculate a credibility score.
- **Final Classification:** Based on the credibility score, the news is classified as Real or Fake.

Analysis and Comparative Review

Several recent studies support the hybrid approach used by Kavach News:

- **Wang et al. (2024)** showed that integrating multi-source verification using APIs increased detection accuracy compared to static machine learning models.
- **Patel and Shah (2024)** developed an NLP-based fake news classifier achieving a precision of 85.2% and demonstrated the importance of real-time source checking.

- **Ahmed et al. (2023)** emphasized that combining TF-IDF features with API-driven verification enhances the robustness of misinformation detection systems.

These results validate the methodology adopted by Kavach News for providing fast, scalable, and reliable fake news verification.

Figure 1: Use case diagram

IV. RESULTS AND DISCUSSION

This section presents the experimental results and highlights the effectiveness of the proposed Kavach News system. Trained and validated on preprocessed datasets like Fake News Net and LIAR, the model was evaluated using standard performance metrics such as accuracy, precision, recall, and response time. Kavach News provides a fast and automated solution to detect misinformation, reducing verification time compared to manual methods, while its user-friendly interface allows users to input a news URL or headline and receive reliable classification results within seconds.

SN.	Metric	Value
1	Accuracy	87.5%
2	Precision	85.0%
3	Recall (Sensitivity)	88.0%
4	F1-Score	86.5%
5	Average Response Time	450 ms

Table 1. Performance Metrics of Proposed Kavach News Model

The backend processes, which include NLP-based preprocessing, similarity matching with trusted sources, and credibility scoring, ensure that predictions are reliable and robust .The project highlights the benefits of integrating technology with traditional news verification processes. By automating and streamlining credibility checks, Kavach News improves the efficiency, accuracy, and scalability of fake news detection. Additionally, the system's ability to display supporting verified news links further builds user trust and enhances transparency. In summary, Kavach News demonstrates how AI and NLP techniques can effectively modernize and improve the detection of misinformation, making the internet a safer place for information sharing.

V. CONCLUSION

Kavach News offers an effective solution for combating fake news by utilizing a real-time, scalable detection system. It combines NLP, web scraping, and trusted source verification to achieve 87.5% accuracy. Future enhancements include multimedia verification, mobile app development, and integration of explainable AI techniques.

VI. REFERENCES

[1] Kai Shu, Amy Sliva, Suhang Wang, Jiliang Tang, Huan Liu, 'Fake News Detection on Social Media: A Data Mining Perspective,' IEEE Transactions on Knowledge and Data Engineering, 2017.

[2] R. Gonsalves, A. Pinto, 'Fake News Detection Using Machine Learning Techniques,' IEEE International Conference on Data Mining Workshops (ICDMW), 2019.

[3] N. Kumar, S. S. Yadav, R. S. Yadav, 'Detecting Fake News with Deep Learning,' IEEE Xplore, 2020.

[4] S. Parikh, A. Atrey, 'Media-Rich Fake News Detection: A Survey,' IEEE Access, 2018.

[5] Ahmed H., Traore I., Saad S., 'Detecting Opinion Spams and Fake News Using Text Classification,' International Journal of Computer Applications, 2018.

[6] P. Ganesh Prabhu, D. Ambika, “Study on Behaviour of Workers in Construction Industry to Improve Production Efficiency”, International Journal of Civil, Structural, Environmental and Infrastructure Engineering Research and Development (IJCSEIERD), Vol. 3, Issue 1, Mar 2013, 59-66