ISSN: 2395-7852

International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

Volume 11, Issue 1, January 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

IMPACT FACTOR: 7.583

| www.ijarasem.com | ijarasem@gmail.com | +91-9940572462 |

International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

| ISSN: 2395-7852 | www.ijarasem.com | Impact Factor: 7.583 | Bimonthly, Peer Reviewed & Referred Journal|

| Volume 11, Issue 1, January 2024 |

Fake News Detection Using Deep Learning Technique

Dr.D.Brightlin, V.Mohanambal, N.Nagapadmavathi, P.Vaishnavi,

Assistant Professor, Department of Cyber Security, Muthayammal Engineering College, Rasipuram, India

Student, Department of Cyber Security, Muthayammal Engineering College, Rasipuram, India

Student, Department of Cyber Security, Muthayammal Engineering College, Rasipuram, India

Student, Department of Cyber Security, Muthayammal Engineering College, Rasipuram, India

ABSTRACT: Information quality in social media is an increasingly important issue, but web- scale data hinders experts' ability to assess and correct much of the inaccurate content, or "fake news," present in these platforms. Automated detection of fake news is a hard task to accomplish as it requires the model to understand nuances innatural language. Develops a method for automating fake news detection on datasets by learning to predict accuracy assessments. With the rapid proliferation of social media, the dissemination of fake news has become a significant societal concern. The ability to distinguish between genuine and fabricated information is crucial for maintaining the integrity of online platforms.

We propose a novel deep learning-based framework, named Deep Fake Guard, designed for the automated detection of fake news in social media. Deep Fake Guard utilizes a multi-modal approach, incorporating both textual and visual information to enhance the accuracy of fake news detection. For textual analysis, bidirectional long short-term memory (Bi-LSTM) network to capture the contextual relationships within the text. Simultaneously, a convolutional neural network (CNN) is employed to extract spatial features from associated images or video frames. Experimental results demonstrate the efficacy of Deep Fake Guard in accurately identifying fake news across various social media platforms. By leveraging the power of deep learning and systems across a value chain.In the ever-evolving landscape of agriculture, and multi- modal analysis, our framework demonstrates a robust and reliable approach to distinguish between authentic and fabricated information, contributing to the ongoing efforts to foster a trustworthy online information environment.

KEYWORDS: Fake news, Deep learning, Neural networks, Natural language processing (NLP),Text classification, Sentiment analysis, Feature extraction, Machine learning, Deep neural networks, Convolutionalneural networks (CNN), Recurrent neural networks (RNN), Natural language understanding, Social media, Information credibility, Misinformation detection, Data pre-processing, Feature engineering, Model evaluation, Fake news dataset, Cross-validation

I. INTRODUCTION

With the accelerated technology adoption by a growing number of users, social media have become the main medium for the dissemination of information on current news and events [1]. While these new media bring severalbenefits (e.g., a large number of consumers reached, instant and continuous updates on one's topics of interest), they also enable the spread of harmful information in the formof fake news, and may thus polarize public discourse regarding critical topics(e.g., elections , vaccination [2], health hazards) and threaten democratic values in vegetables and fruits become excessive. It is a significanthealth risk. To mitigate the threat of fake news, journalists have started to manually classify newsand offerwebsites with fact-checking mechanisms that provide a verdict regarding its veracity, such as PolitiFact and Snopes. However, such solutions may fail in high- velocity information spreading social media, as news appears and spreads much faster than any manual verification; by the time it is checked, the news mayhave been already shared with many sources and its negative effect may have taken hold. In this paper, we propose newmodels and strategies for misinformation detection and mitigation to address the current real-world challenges posed by fake news.(O1) Propose new deep learning architectures to accurately detect fake news in social media; and (O2) Propose new real-time strategies to mitigate the spread of detected fake news in a social network.

Fake news has become a significant concern in the era of information overload and social media dominance. The spread of misinformation can have severe consequences,impacting public opinion, elections, and even public health. To

address this issue, researchers and data scientists have been exploring various techniques, including deep learning, to detect and combat fake news. Deep learning, a subset of machine learning, involves training neural networks on large amounts of data to recognize patterns and make predictions. This powerful technology has shown promise in various natural language processing tasks, making it a suitable candidatefor fake news detection.

The rise of fake news has prompted researchers and technologists to explore innovative approaches for detecting and mitigating its impact. In recent years, artificial intelligence (AI) and machine learning (ML) techniques, particularly deep learning, have emerged as powerful tools for analyzing large volumes of textual data and identifying patterns indicative of fake news. Deep learning algorithms, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), offer the ability to extract complex features from text and make predictions with high accuracy, making them well-suited for fake news detection tasks.

Despite the promise of deep learning in fake news detection, the task remains inherently challenging due to the dynamic and evolving nature of fake news itself. Fake news articles often mimic the style and format of legitimate news sources, making them difficult to distinguish based on traditional textual features alone. Moreover, the decentralized and viral nature of social media platforms complicates the detection process, as fake news can spread rapidly across networks before being identified and debunked.

To address these challenges, researchers have developed a variety of approaches and methodologies for fake news detection using deep learning techniques. These include the use of natural language processing (NLP) models to analyze linguistic patterns and sentiment analysis techniques to assess the credibility of news articles. Additionally, researchers have explored the use of network analysis methods to examine the propagation patterns of fake news on social media platforms and identify influential nodes and communities.

In this context, our project aims to contribute to the ongoing efforts in fake news detection by leveraging deep learning techniques to analyze textual data and identify fake news articles with high accuracy. By developing a robust and scalable fake news detection system, we seek to empower users with the tools and insights needed to navigate the complex landscape of online information and make informed decisions. Through a combination of advanced algorithms, comprehensive datasets, and rigorous evaluation methodologies, we strive to advance the state-of-the-art in fake news detection and promote information integrity in the digital age.

II. SYSTEM ANALYSIS

Existing System:

Existing fake news detection systems predominantly employ rule-based algorithms or traditional machine learning models, often struggling to adapt to evolving misinformation tactics. Despite incorporating natural language processing, these systems may falter in capturing subtle nuances, limiting their accuracy.Thus, the current landscape underscores the necessity for more dynamic and adaptable approaches, such as deep learning, to effectively combat the proliferation of fake news.

Limitations:

Existing fake news detection systems often struggle with adapting to evolving misinformation tactics, limited by their reliance on static features and scalability issues with processing extensive social media data. These constraints underscore the need for more dynamic and adaptable approaches, such as deep learning, to effectively combat the proliferation of fake news.

Proposed System:

The proposed system employs deep learning models for enhanced accuracy in fake news detection by analyzing intricate patterns in textual data. Through extensive training on diverse datasets, adapts to evolving misinformation tactics, improving detection effectiveness over time. Integration of natural language processing enhances linguistic feature analysis and sentiment evaluation, augmenting detection capabilities. Real-time monitoring of social media feeds and news sources enables alerts, insights, empowering users to navigate the digital information landscape with confidence.

Expected Merits:

The proposed system is anticipated to excel in detecting fake news by leveraging deep learning's ability to discern complex patterns in textual data. Its adaptability to evolving misinformation tactics and real-time monitoring features ensure timely and accurate detection, empowering users to make informed decisions in navigating online information.

SYSTEM REQUIREMENTS

Hardware Requirements:

- System : Intel Processor
- Hard disk : 100Mb
- Monitor : 14 Inch Color Monitor
- RAM : 1 Gb

Software Requirements:

- Operating System: Windows
- Front End : PYTHON
- Back End : MYSQL
- Tool : PYCHARM

Software Description:

PYTHON:

Python, a versatile and user-friendly programming language, serves as the foundation for creating dynamic and interactive user interfaces, enhancing usability and engagement.

MYSQL:

MySQL, a robust and scalable relational database management system, efficiently stores and manages structured data, ensuring reliability and high performance for the backend operations.

PYCHARM:

PyCharm, an advanced integrated development environment (IDE) for Python, offers comprehensive features such as code completion, debugging, and version control integration, facilitating efficient development and maintenance of Python projects.

III. LITRETURE SURVEY

- **Title :** A sensitive stylistic approach to identify fake news on social networking (2020)
- **Author :** Nicollas r. de Oliveira
- **Concept :** Propose a computational stylistic analysis based on natural language processing, efficiently applying machine learning algorithms to detect fake news in texts extracted from social media.
- **Limitation :** Not implemented in real time environments.
- **Reference :** de Oliveira, Nicollas R., Dianne SV Medeiros, and Diogo MF Mattos. " A sensitive stylistic approach to identify fake News on social networking." IEEE Signal Processing Letters 27 (2020): 1250-1254.

- **Title :** Fake news detection regarding the hong kong events from tweets (2020)
- **Author :** Maria Nefeli Nikiforos.
- **Concept :** The rapid development of network services has led to the exponential growth of online information and the increasing number of social media users.
- **Limitation :** Computational process in low
- **Reference :** Nikiforos, Maria Nefeli, et al. "Fake news detection regarding the Hong Kong events from tweets." IFIP International Conference on Artificial Intelligence Applications and Innovations. Springer, Cham, 2020.

- **Title** : A survey on recent advances in machine learning techniques for fake news detection (2020).
- **Author** : Adline Rajasenah Merryton
- **Concept :** This paper also showcases a survey on different researches performed in fake news detection using traditional machine learning methods and Deep Neural Networks.
- **Limitation :** There is no security in fake news detection.
- **Reference :** Merryton, Adline Rajasenah, and Gethsiyal Augasta. "A survey on recent advances in machine learning techniques for fake news detection." Test Eng. Manag 83 (2020):11572-11582

- **Title :** Fake news detection using deep learning models: a novel approach (2020)
- **Author :** Sachin Kumar
- **Concept :** Collect 1356 news instances from various users via Twitter and media sources such as PolitiFact and create several datasets for the real and the fake news stories.
- **Limitation :** Does not support newly updated datasets.
- **Reference :** Kumar, Sachin, et al. "Fake news detection using deep learning models: A novel approach." Transactions on Emerging Technologies 31.2 (2020): e3767.

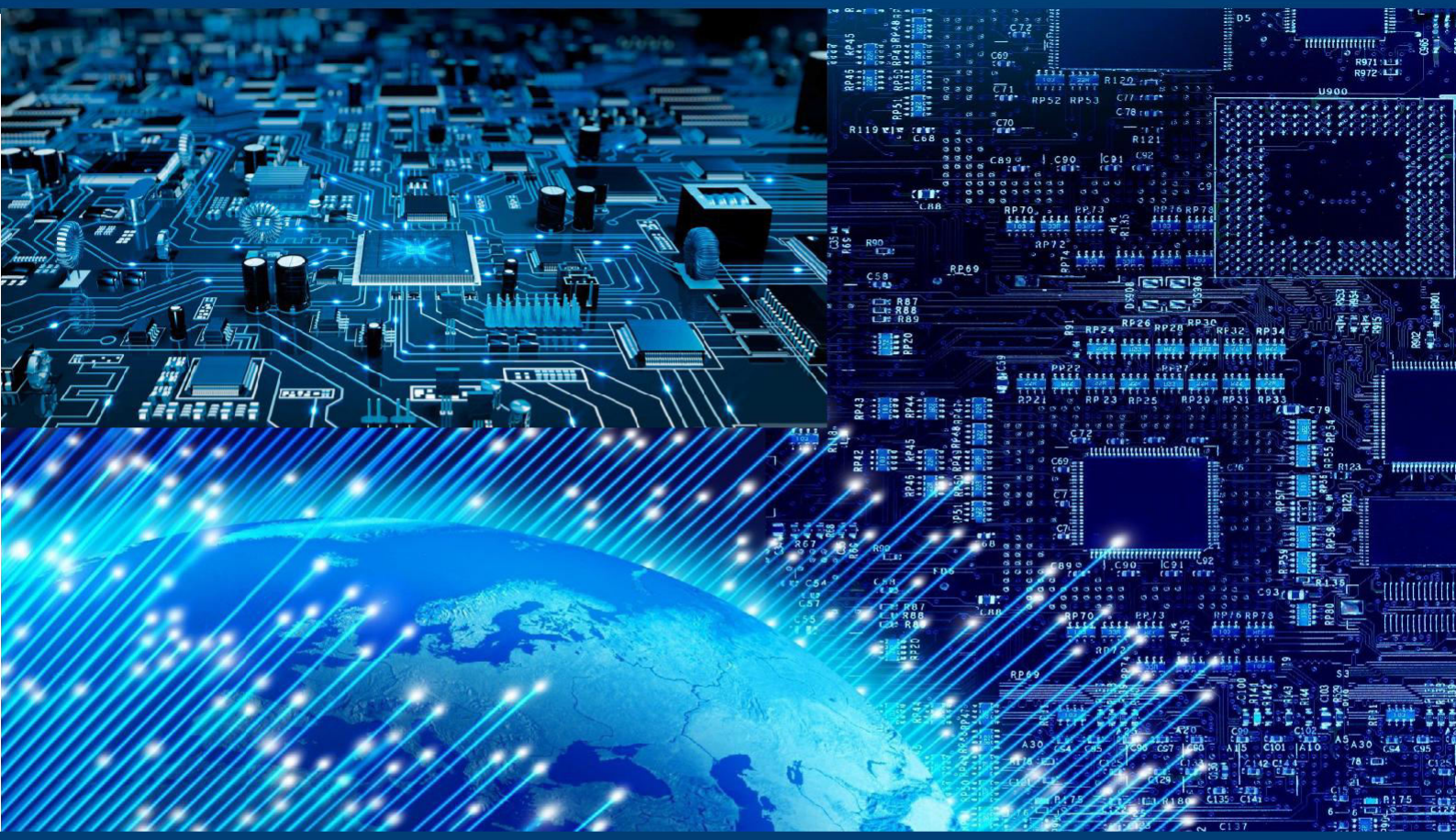
- **Title :** Fake news detection using bi-directional recurrent neural network (2019)
- **Author :** bahad, p. Saxena
- **Concept :** The recent growth in the field of machine learning also came with the theories and algorithms to detect fake data
- **Limitation :** There is no automated approach to predict the fake news
- **Reference :** Bahad, Pritika, Preeti Saxena, and Raj Kamal. "Fake news detection using bi-directional LSTM-recurrent neural network." Procedia Computer Science 165 (2019): 74-82

IV. CONCLUSION

In conclusion, the proposed fake news detection system represents a significant step forward in combating the proliferation of misinformation in the digital landscape. By leveraging deep learning techniques, particularly neural networks, the system aims to enhance detection accuracy by analyzing intricate patterns and nuances in textual data. Through extensive training on diverse datasets, it is expected to adapt and evolve alongside emerging misinformation tactics, ensuring sustained effectiveness over time. Integration of natural language processing capabilities further augments the system's ability to analyze linguistic features and sentiment, enhancing detection capabilities.

REFERENCES

1. de Oliveira, Nicollas R., Dianne SV Medeiros, and Diogo MF Mattos. "A sensitive stylistic approach to identify fake news on social networking." IEEE Signal Processing Letters 27 (2020): 1250-1254.
2. Nikiforos, Maria Nefeli, et al. "Fake news detection regarding the Hong Kong events from tweets." IFIP International Conference on Artificial Intelligence Applications and Innovations. Springer, Cham, 2020.
3. Merryton, Adline Rajasenah, and Gethsiyal Augasta. "A survey on recent advances in machine learning techniques for fake news detection." Test Eng.Manag 83 (2020): 11572-11582.
4. Kumar, Sachin, et al. "Fake news detection using deep learning models: A novel approach." Transactions on Emerging Telecommunications Technologies 31.2 (2020): e3767.z
5. Bahad, Pritika, Preeti Saxena, and Raj Kamal. "Fake news detection using bi-directional LSTM-recurrent neural network." Procedia Computer Science 165(2019): 74-82
6. M. Tsikerdekis and S. Zeadally, "Misinformation Detection Using Deep Learning"in IT Professional, vol. 25, no. 05, pp. 57-63, 2023.doi: 10.1109/MITP.2023.3314752



International Journal of Advanced Research in Arts, Science, Engineering & Management (IJARASEM)

| Mobile No: +91-9940572462 | Whatsapp: +91-9940572462 | ijarasem@gmail.com |