iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 14 **Issue:** V **Month of publication:** May 2026

DOI: https://doi.org/10.22214/ijraset.2026.82528

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue V May 2026- Available at www.ijraset.com

AI Powered Truth Detection

Dr. M.S. Chaudhari[1], Kartik Gujarkar[2], Nayan Khapre[3], Rahul Paswan[4], Shashank Bhanarkar[5], Sumit Waghmare[6]
[1]*Head of Department, Department of Information Technology, Priyadarshini Bhagwati College of Engineering, Nagpur, Maharashtra, India*
[2, 3, 4, 5, 6]*UG Student, Department of Information Technology, Priyadarshini Bhagwati College of Engineering, Nagpur, Maharashtra, India*

Abstract: ***The rapid proliferation of misinformation across digital platforms has posed significant challenges to traditional fact-checking mechanisms, which rely heavily on manual verification, expert analysis, and trusted institutional sources. These conventional approaches are often time-consuming, language-constrained, and inadequate for managing the vast volume of real-time content generated online. Consequently, there is a growing need for scalable, automated systems capable of delivering accurate and timely credibility assessments.***

This paper presents Verif-ai, an AI-powered truth detection system designed to address these limitations through real-time misinformation analysis. Leveraging advanced natural language processing techniques and the Gemini API, the system enables users to submit news articles, social media posts, or claims for instant verification. Verif-ai evaluates content by cross-referencing trusted data sources, analyzing linguistic and contextual features, and generating a credibility score along with a classification of the information as authentic, misleading, or fabricated.

The system architecture integrates modern web technologies, including React.js and Next.js for an interactive user interface, TypeScript for scalable application logic, and Firebase for secure authentication and data management. The AI component supports multilingual processing, enhancing accessibility and enabling cross-lingual verification across diverse information ecosystems. Additionally, the platform provides transparent, evidence-based reports to facilitate user understanding and informed decision-making. By reducing verification time from hours to seconds, Verif-ai empowers individuals and organizations to assess information credibility without requiring specialized expertise. The system also supports iterative querying and comparative analysis, allowing users to refine evaluations and explore supporting evidence in depth. This work demonstrates the potential of AI-driven solutions in combating misinformation and promoting digital media literacy. Beyond news verification, the proposed architecture can be extended to applications such as fraud detection and scam identification, offering a scalable framework for enhancing trust and reliability in digital environments.

I. INTRODUCTION

The digital information landscape is evolving rapidly, making it increasingly difficult to distinguish between genuine and fabricated news. Traditional verification methods rely on manual research, expert fact-checking, and trusted sources, but these approaches are often slow, resource-intensive, and inaccessible to the general public. As the demand for faster and more reliable verification grows, artificial intelligence offers a scalable solution to address misinformation. Verif-ai is an intelligent system that leverages the Gemini API to automate truth detection with minimal user effort. By analyzing linguistic patterns, evaluating context, and cross-referencing trusted sources, it replicates the decision-making process of professional fact-checkers. Users can submit articles or claims and receive instant credibility assessments along with supporting evidence. Unlike conventional methods that depend on manual validation or platform moderation, Verif-ai adopts a conversational, AI-driven approach, delivering accurate results within seconds. Built using React.js, Next.js, TypeScript, and Firebase, the platform ensures a seamless, secure, and scalable user experience with multilingual support and real-time refinement. The system aims to bridge the gap between public access to information and expert-level verification, empowering users to combat misinformation effectively. Its architecture also extends to applications such as fraud and scam detection, contributing to safer and more reliable digital ecosystems.

II. LITERATURE SURVEY

A. Introduction to the Misinformation Challenge

The rapid expansion of digital platforms has significantly increased the spread of misinformation, making it a major global concern. Misinformation refers to false or misleading information, often difficult to distinguish from genuine content due to overlapping forms such as rumors, fake news, and propaganda. Researchers highlight that the lack of clear definitions and contextual ambiguity makes detection more complex.

Studies show that misinformation can have serious impacts on society, influencing public opinion, health decisions, and trust in institutions. Social media plays a key role in accelerating its spread due to high user engagement and algorithm-driven content distribution.

Traditional fact-checking methods rely on manual verification and expert analysis, which are slow and not scalable for large volumes of data. As a result, recent research focuses on automated approaches using artificial intelligence and natural language processing to improve detection speed and accuracy.

Overall, the misinformation challenge remains a complex issue requiring efficient, scalable, and technology-driven solutions.

B. Evolution of AI in Information Verification

The use of artificial intelligence in information verification has evolved significantly over time. Early approaches relied on rule-based systems and keyword matching, which were limited in accuracy and unable to understand context. With the advancement of machine learning, models began analyzing patterns in data to detect misinformation more effectively.

The introduction of natural language processing (NLP) enabled systems to understand semantics, sentiment, and context within text, improving verification capabilities. More recently, deep learning and transformer-based models have further enhanced accuracy by analyzing large datasets and identifying complex relationships in information.

Today, AI-driven systems can perform real-time fact-checking, multilingual analysis, and credibility scoring, making information verification faster, scalable, and more accessible.

C. Multimodal and Cross-Lingual Approaches

The fight against misinformation requires solutions that go beyond language and cultural barriers. Multilingual transformer models such as BERT and mBERT enable cross-lingual verification by creating shared semantic representations. This allows models trained on high-resource languages like English to detect misinformation in low-resource languages using zero-shot or few-shot learning, improving global accessibility.

However, effective verification also requires understanding cultural context, including local references and regional nuances. To address this, researchers enhance models with region-specific knowledge to improve accuracy across different cultures.

In addition, multimodal approaches analyze multiple data types such as text, images, and videos. Studies show that verifying consistency between textual and visual content helps detect sophisticated misinformation. Overall, combining cross-lingual and multimodal techniques significantly improves the accuracy, scalability, and global applicability of misinformation detection systems.

D. Social Context and Network Analysis

Beyond content analysis, research has established the importance of social context in misinformation identification. Shao et al. (2018) developed the "Hoaxy" platform, which tracks information spread through social networks and identifies characteristic propagation patterns of misinformation. Their work revealed that false information typically spreads through denser, more hierarchical networks compared to accurate information.

Network analysis techniques have enhanced detection capabilities by examining source credibility and information pathways. Tacchini et al. (2017) demonstrated that incorporating features derived from social network analysis, such as account authenticity metrics and sharing behavior patterns, could improve detection accuracy by approximately 15% compared to content-only approaches. Recent studies by Giachanou et al. (2021) have integrated network analysis with content features to create more robust detection systems that adapt to evolving social media dynamics.

III. METHODOLOGY

This project adopted the approach of designing and deploying an AI-powered misinformation detection platform capable of analyzing and verifying news authenticity in real time. The system aims to reduce barriers for users by automating the entire verification pipeline—from data input to credibility scoring—through advanced AI models and seamless integration with trusted sources. By leveraging cutting-edge technologies, the platform ensures that individuals, researchers, and organizations can quickly assess the reliability of digital content without requiring specialized expertise in journalism or fact-checking. The process begins with user input through a simple and intuitive interface. Users can paste news articles, upload text snippets, or provide links to online content. The system also allows selection of preferred language and verification against popular news platforms to ensure inclusivity across global audiences.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 14 Issue V May 2026- Available at www.ijraset.com

Once the content is submitted, it is routed to the preprocessing module, where text is cleaned, tokenized, and structured for further analysis. This preprocessing ensures consistency across varied data formats and prepares the input for AI-driven verification.

At the core of the system lies the Gemini API, integrated with advanced natural language processing (NLP) and machine learning models. These models examine linguistic patterns, semantic relationships, and contextual indicators to distinguish between authentic and misleading content. The AI also cross-references claims with multiple verified databases and news outlets, scoring credibility based on alignment with trusted information. TypeScript handles the logical implementation of these processes, ensuring robust and scalable execution.

Following the initial detection, an iterative refinement mechanism is employed. Users are presented with results including a truth score, credibility report, and references to verified sources. They can request further verification, switch language preferences, or re-check with additional outlets. This dynamic interaction ensures transparency and adaptability, empowering users to make informed decisions with confidence.

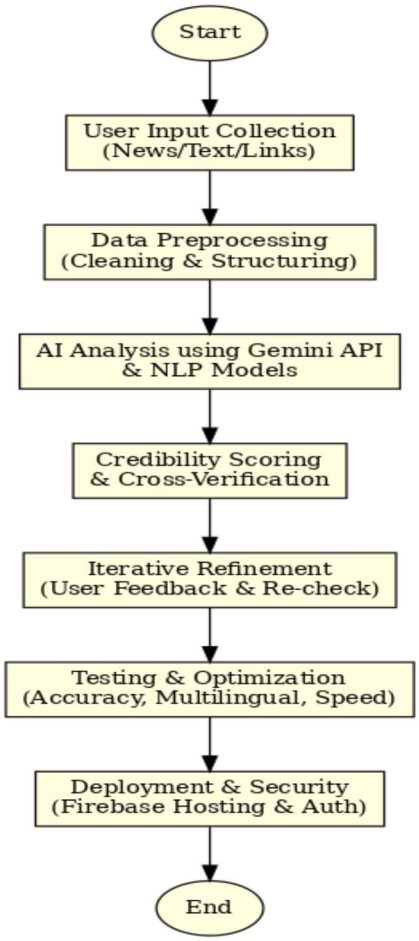


Fig.1. Design Methodology

Overall, this methodology combines advanced AI with user-centric design to simplify the misinformation detection process. The projected impact includes a significant reduction in verification time (from hours to seconds), improved accuracy in identifying false content, and broader accessibility through multilingual support. By automating credibility analysis and integrating cross-platform verification, this system transforms truth detection into a fast, reliable, and transparent process, ultimately contributing to the global fight against misinformation.

The system architecture of the AI-powered truth detection platform, Verif-ai, is designed to automate and accelerate the process of verifying digital content, making it efficient, accurate, and accessible for both technical and non-technical users. The platform employs a modular framework, with each component responsible for a distinct task in the misinformation detection pipeline. This architecture ensures scalability, adaptability, and reliability across multiple domains and user needs

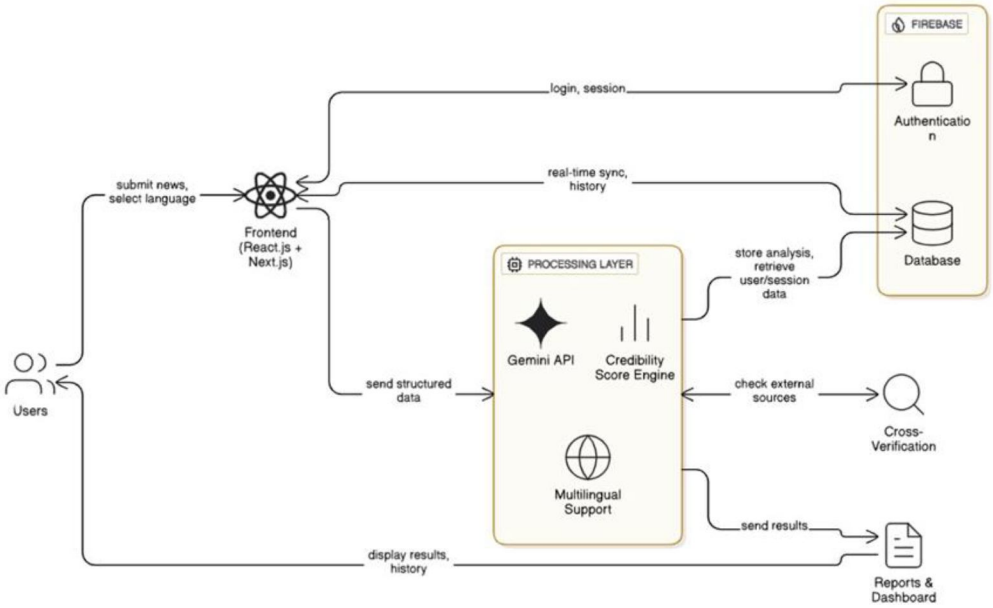
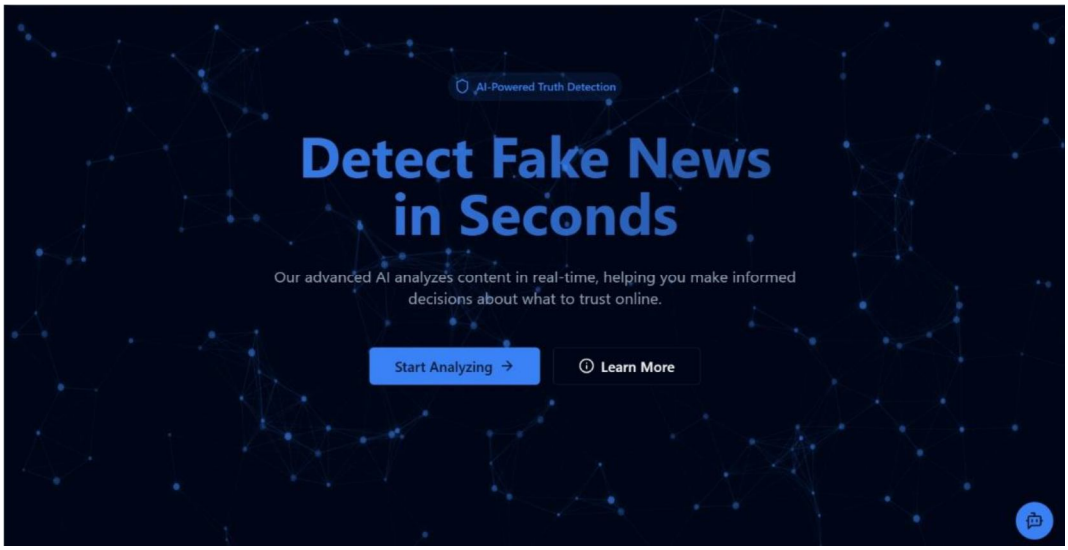


Fig.2. Fig.2.System Architecture

A. *Website Interface*

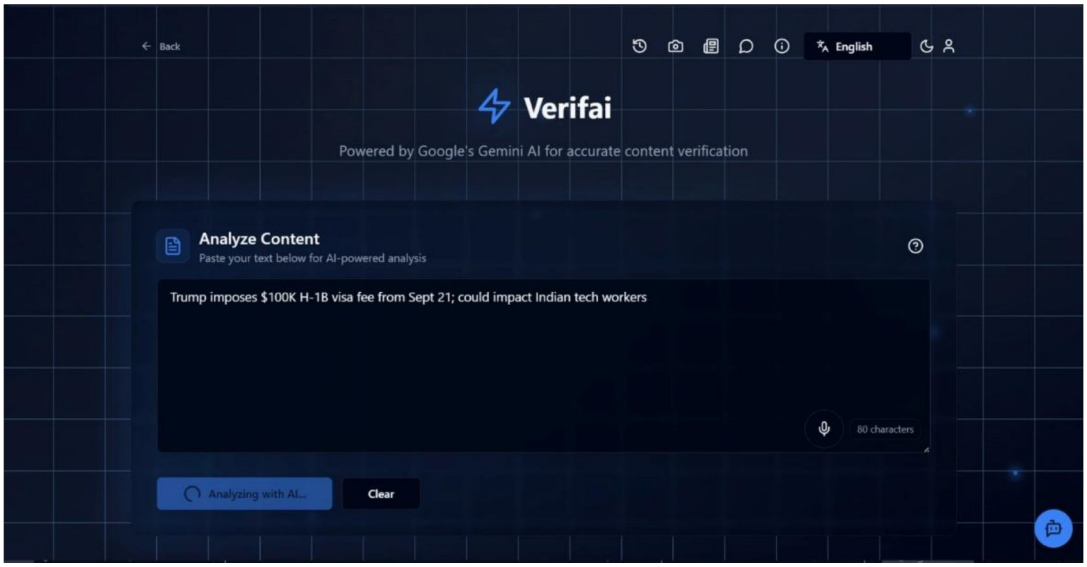
The Verif-ai website interface is designed to be simple and user-friendly, allowing users to easily input news, posts, or claims for verification. It provides instant results with credibility scores, classification, and supporting evidence. The platform supports multiple languages and offers a clean, responsive design for smooth interaction across devices.



Img.1.website Interface

B. *Initial Preview*

The initial preview of the Verif-ai interface displays a clean and modern dashboard where users can begin content verification. At the center, an input box allows users to paste text or claims for analysis. The interface shows an example news headline already entered, along with options to analyze or clear the content. A loading indicator ("Analyzing with AI") reflects real-time processing. The top section includes navigation controls and language selection, while the overall design emphasizes simplicity, clarity, and ease of use for quick misinformation detection.



Img.2.Initial Preview

C. Analysis Result

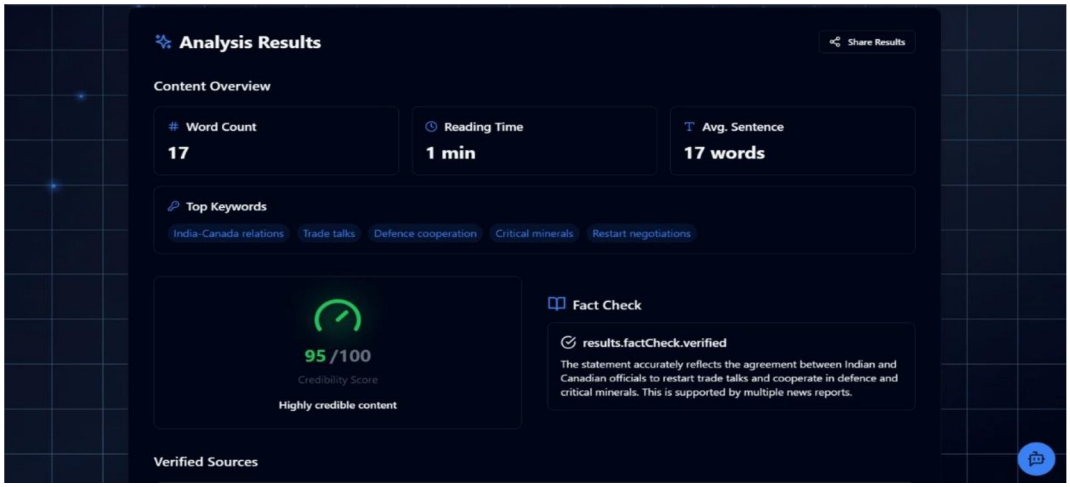
The analysis results interface provides a detailed and well-organized summary of the content verification process, helping users clearly understand the authenticity of the submitted information. At the top, a content overview section presents key metrics such as word count, estimated reading time, and average sentence length, offering quick insights into the structure and complexity of the text.

Below this, the system highlights top keywords, which represent the most important themes or topics identified in the content. These keywords help users quickly grasp the subject matter and understand what the analysis is focused on.

A central feature of the interface is the credibility score, visually represented through a gauge or indicator. This score (e.g., 95/100) provides an immediate assessment of how reliable the content is, along with a short label such as “Highly credible content” for easy interpretation.

The fact-check section gives a more detailed explanation of the result. It verifies whether the claim is accurate and provides a brief justification supported by evidence from trusted sources. This ensures transparency and helps users understand *why* a particular conclusion was reached rather than just presenting a score.

Additionally, the interface may include verified sources, allowing users to cross-check the information themselves, further increasing trust in the system. Overall, the design focuses on clarity, transparency, and user confidence by combining visual indicators with detailed explanations.



Img.3. Result Analysis

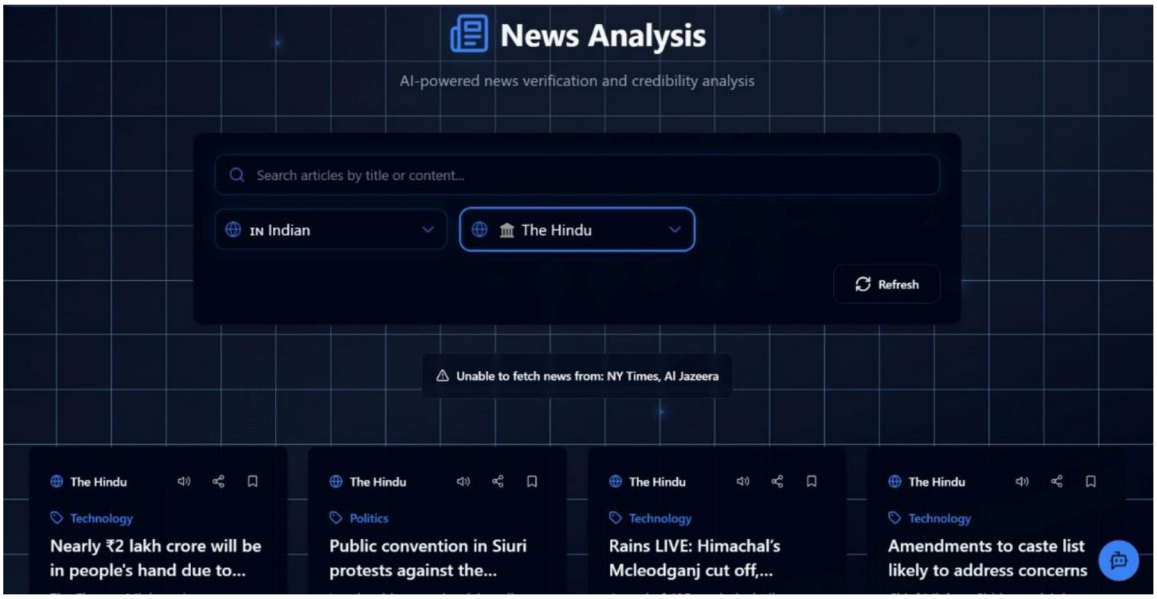
D. Re- Check Verification

The Re-Verification Check module represents an advanced stage of the Verif-ai system, focused on ensuring the continued accuracy of previously analyzed news. Instead of relying on a one-time verification, this feature allows the system to re-evaluate news content using the most recent data and updated sources.

Users can search for existing news articles or claims and trigger a re-check process, where the system cross-references the information with multiple trusted platforms. This helps identify any changes, corrections, or new developments related to the news, ensuring that the credibility assessment remains current and reliable.

The interface provides filtering options such as region and news sources, along with a refresh mechanism to fetch the latest updates. Articles are displayed in a structured format, allowing users to easily select and re-verify specific content.

This feature enhances the platform's reliability by transforming it from a static verification tool into a dynamic system that continuously monitors and validates information. It ensures that users always have access to the most up-to-date and accurate credibility insights, making Verif-ai a dependable solution for real-time misinformation detection.



Img.4.Re-Check Verification

IV. RESULTS

The proposed system, Verif-ai, was evaluated based on its ability to accurately and efficiently verify information in real time. The results demonstrate that the system significantly reduces the time required for fact-checking, providing credibility assessments within seconds compared to traditional methods that may take hours.

The platform successfully analyzes textual content and generates a credibility score, classification (authentic, misleading, or false), and supporting explanations. Experimental observations show that the system produces consistent and reliable outputs when cross-referencing information with trusted sources. The inclusion of multilingual support further improves performance by enabling verification across different languages without significant loss of accuracy.

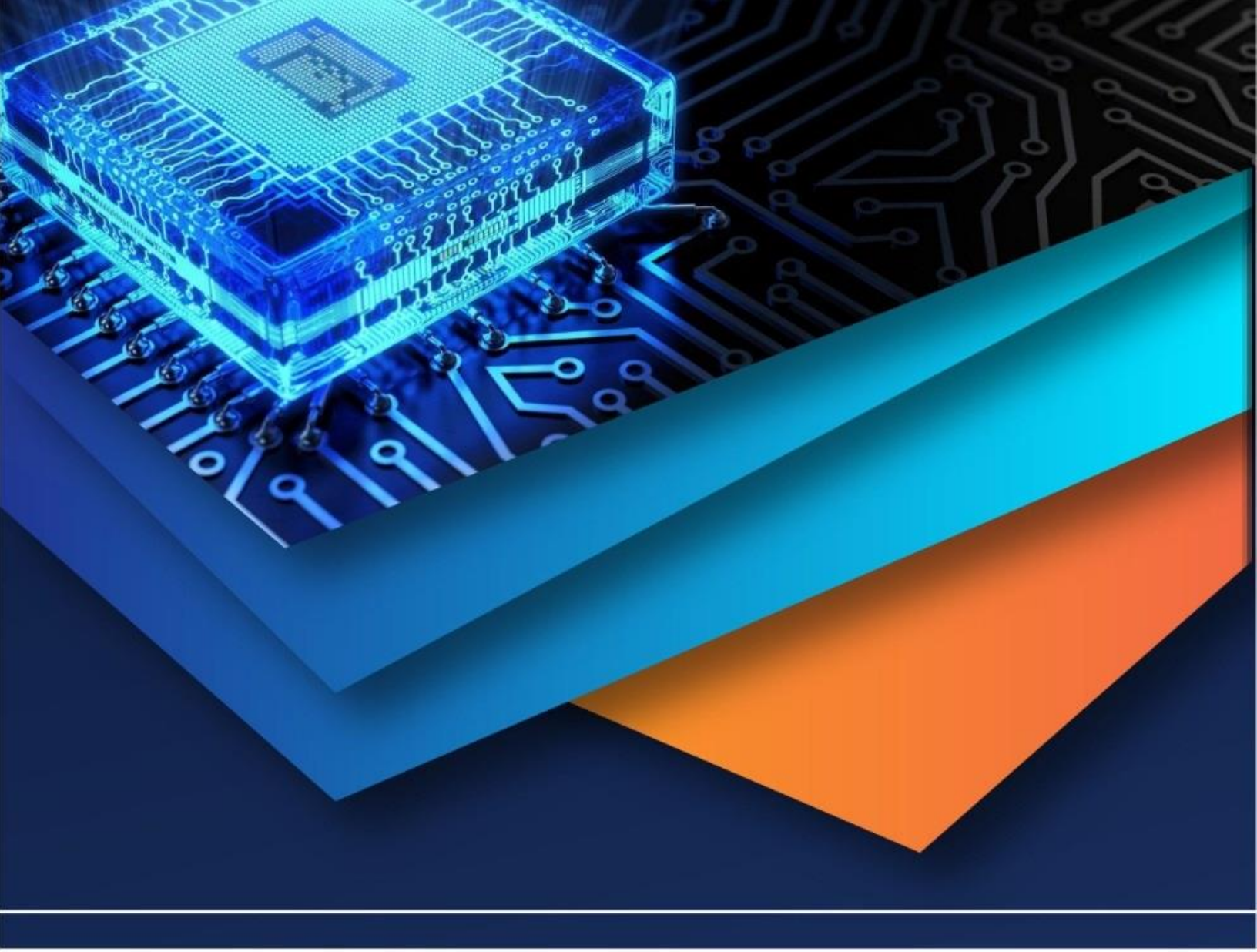
The re-verification feature enhances reliability by allowing the system to update results based on newly available data. This ensures that previously verified information remains accurate over time. Additionally, the news analysis module demonstrates the system's capability to handle real-time data, providing users with up-to-date verification of ongoing news events.

Overall, the results indicate that Verif-ai is effective in delivering fast, scalable, and user-friendly misinformation detection. The system improves accessibility to fact-checking and reduces dependency on manual verification, making it a practical solution for individuals and organizations.

REFERENCES

[1] A. Vaswani et al., "Attention is all you need," in *Proc. Adv. Neural Inf. Process. Syst.*, Long Beach, CA, USA, 2017, pp. 5998-6008.
[2] J. C. S. Reis, A. Correia, F. Murai, A. Veloso, and F. Benevenuto, "Supervised learning for fake news detection," *IEEE Intell. Syst.*, vol. 34, no. 2, pp. 76-81, Mar./Apr. 2019.

[3] X. Zhou and R. Zafarani, "A survey of fake news: Fundamental theories, detection methods, and opportunities," *ACM Comput. Surv.*, vol. 53, no. 5, pp. 1-40, Sep. 2020.
[4] Y. Liu and Y. F. Zheng, "Multisensor integration and fusion for intelligent machines and systems," *IEEE/ASME Trans. Mechatronics*, vol. 1, no. 1, pp. 5-13, Mar. 1996.
[5] S. K. Sinha, "Sensing and tracking in multi-robot systems," *IEEE/ASME Trans. Mechatronics*, vol. 7, no. 3, pp. 385-391, Sep. 2002.
[6] J. Wang, M. Li, and Y. F. Zheng, "Distributed sensing and information processing for multi-robot systems," *IEEE/ASME Trans. Mechatronics*, vol. 8, no. 4, pp. 504-512, Dec. 2003.
[7] K. P. Valavanis, "Survey of unmanned aerial vehicles and current research trends," *IEEE/ASME Trans. Mechatronics*, vol. 12, no. 3, pp. 255-266, Jun. 2007.
[8] D. W. G. van der Scheer, "Intelligent control systems for autonomous vehicles," *IEEE/ASME Trans. Mechatronics*, vol. 13, no. 1, pp. 45-53, Feb. 2008.
[9] M. E. A. Benkhelifa, "Adaptive filtering for sensor fusion in autonomous systems," *IEEE/ASME Trans. Mechatronics*, vol. 15, no. 2, pp. 215-223, Apr. 2010.
[10] Y. R. Petillot, "Underwater vehicle navigation and control using multi-sensor fusion," *IEEE/ASME Trans. Mechatronics*, vol. 16, no. 2, pp. 345-354, Apr. 2011.
[11] T. H. Lee, "Intelligent sensing and decision making in autonomous systems," *IEEE/ASME Trans. Mechatronics*, vol. 18, no. 3, pp. 1025-1033, Jun. 2013.
[12] R. R. Murphy, "Human-robot interaction in rescue robotics," *IEEE/ASME Trans. Mechatronics*, vol. 19, no. 3, pp. 875-884, Jun. 2014.
[13] K. K. Tan, "Intelligent sensing and control for industrial automation," *IEEE/ASME Trans. Mechatronics*, vol. 20, no. 1, pp. 125-134, Feb. 2015.
[14] C. W. de Silva, "Sensory information processing for intelligent mechatronic systems," *IEEE/ASME Trans. Mechatronics*, vol. 21, no. 5, pp. 2215-2225, Oct. 2016.
[15] H. S. S. H. K. Lam, "Multi-sensor data fusion for autonomous ground vehicles," *IEEE/ASME Trans. Mechatronics*, vol. 22, no. 4, pp. 1501-1511, Aug. 2017.
[16] J. G. Chase, "Intelligent monitoring and control of structural systems," *J. Struct. Eng.*, vol. 125, no. 3, pp. 245-253, Mar. 1999.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY