

AUTOMATIC DETECTION OF FAKE NEWS USING AI

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ABSTARCT- *This Paper Presents an Artificial Intelligence (AI)–based Fake News Detection System designed to identify and classify misleading information from textual content ,images , videos, andthe documents. The proposed framework utilizes Google’s Gemini Multimodel AI model integrated with a Streamlit-based web application to perform intelligent content verification through Natural Language Processing (NLP) and multimodal analysis.The system enables users to upload news articles , images, videos, or text documents and receive real-time authenticity assesments along with detailed explanations supporting the classification results. The proposed AI framework was evaluated using diverse news samples and multimedia content, demonstrating high accuracy in distinguishing genuine, misleading, and fake information while providing context-aware reasoning for*

each prediction, students, and the general public. Therefore, AI-driven fake news detection provides an effective, reliable, and intelligent approach to improving information credibility and promoting responsible digital communication across modern online platforms.

KEYWORDS: *Artificial Intelligence(AI), Fake News Detection, Machine Learning (ML), Natural Language Proccessing (NLP), Google Gemini AI, Multimodal AI, Text Classification, Image Verification, Misinformation, Streamlit, Fact-Checking, Framework, Content verification.*

INTRODUCTION

The rapid growth of digital media and online social networking platforms has significantly increased the spread of fake news and misinformation, posing serious challenges to public awareness, decision-making, and social stability. Traditional manual fact-checking methods are often

time-consuming, labor-intensive, and insufficient to cope with the large volume of information shared every day. Therefore, Artificial Intelligence (AI)-based fake news detection systems have emerged as an effective solution for automatically identifying misleading and false content. By leveraging Machine Language (ML), Natural Language Processing (NLP), and multimodal AI techniques, these systems can analyze textual content, images, videos, and documents to determine their authenticity. The proposed AI-based fake news detection system integrates Google's Gemini AI model with a streamlit web application to provide accurate, real-time verification and detailed explanations, enabling users to make informed decisions while promoting trustworthy digital communication.

LITERATURE SURVEY

AI-based fake news detection overcomes the limitations of traditional verification methods by automatically analyzing textual content, image, videos, and documents to identify misleading or false information. Machine Learning (ML) and Natural Language Processing (NLP) techniques enable the system to recognize linguistic patterns, contextual inconsistencies, and semantic relationships associated with fake

news, while multimodal AI models analyze both textual and visual content for comprehensive verification of news authenticity. The integration of Google's Gemini AI model provides real-time content analysis and context-aware explanations, improving the accuracy and reliability of fact-checking. This intelligent approach reduces the time and effort required for manual verification, supports informed decision-making, and helps limit the spread of misinformation across digital platforms. Recent research highlights that combining AI, multimodal learning, and cloud-based web applications significantly enhances automated fact-checking, enabling scalable, efficient, and reliable misinformation detection for journalists, researchers, students, and the general public.

RELATED WORK

Fake news detection research explains that traditional manual fact-checking methods cannot always identify misinformation quickly. Recent studies show that Artificial Intelligence (AI) and Machine Learning (ML) can accurately detect fakenews by analyzing textual and visual content. Natural Language Processing (NLP) techniques enable continuous analysis of news articles, images, videos, and

documents. Multimodal AI models improve detection accuracy by combining text and image analysis, while cloud-based platforms support real-time content verification and faster decision-making. Overall, AI-based fake news detection enhances information credibility, reduces the spread of misinformation, and improves the reliability of digital communications.

EXISTING SYSTEM

The existing fake news detection system mainly relies on manual fact-checking and verification methods. Information is verified only after it spreads across social media and news platforms. These methods are time-consuming, labour-intensive, and unable to process the large volume of online content. Detection mostly depends on human experts and fact-checking organizations, resulting in delayed identification of false information. As a result, fake news spreads rapidly, creating misinformation and confusion. Traditional systems also lack real-time analysis, multimodal verification, and AI-based automation, reducing their effectiveness in preventing the spread of fake news.

PROPOSED SYSTEM

The proposed system uses Artificial Intelligence (AI) and Machine Learning

(ML) to automatically detect fake news from text, image, video, and documents. Google's Gemini Multimodal AI analyses the uploaded content using Natural Language Processing (NLP) and image understanding techniques to determine its authenticity. The system generates real-time verification results along with detailed explanations, helping users identify misleading information quickly. This approach reduces manual fact-checking, improves detection accuracy, minimizes the spread of misinformation, and provides a reliable, user-friendly solution for digital news verification.

SYSTEM ARCHITECTURE

The system architecture consists of a user interface, a Streamlit web application, Google Gemini Multimodal AI, and a temporary data storage module. Users upload news articles, images, videos, or documents through the web interface. The uploaded content is pre-processed and analyzed using Natural Language Processing (NLP) and multimodal AI techniques. The Gemini AI model classifies the content as Real, Fake, or Misleading and generates a detailed explanation for the prediction. The verification results are displayed instantly to the user. While the uploaded content and responses are

maintained during the active session to ensure smooth and efficient fact-checking. The system processes the uploaded content using AI models to provide accurate predictions and detailed explanations, ensuring reliable and efficient fake news detection. It supports text, image, and video verification, making the system flexible for detecting misinformation across different types of digital content.

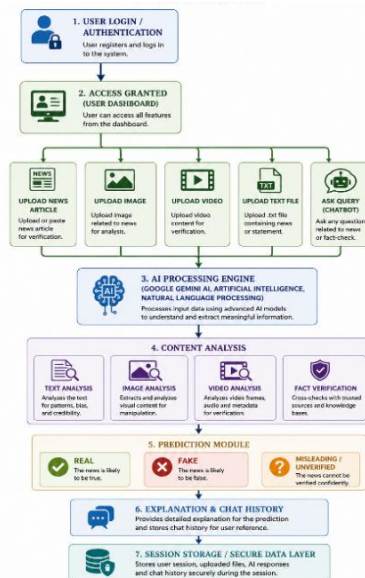


Fig 1: System Architecture

METHODOLOGY DESCRIPTION

The methodology of the proposed AI-based fake news detection system begins with users uploading text, news articles, images, videos, or documents through the Streamlit web application. The uploaded content is pre-processed and analyzed using Google's Gemini Multimodal AI with Natural Language Processing (NLP) and image

understanding techniques. The AI compares the content with contextual information to identify misleading or false news. If fake or suspicious content is detected, the system generates a real-time verification result along with a detailed explanation. Finally, the results are displayed to the user, enabling fact, accurate, and reliable digital news verification while reducing the need for manual fact-checking.

RESULTS AND DISCUSSION

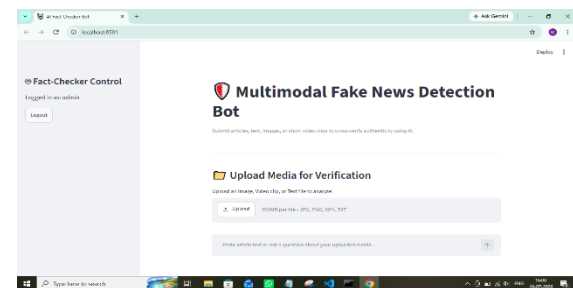


Fig 2: Multimodal Fake News Detection Bot Dashboard

This dashboard provides a real-time overview of the fake news detection system. It displays the total number of news articles analyzed, genuine news, fake news, suspicious content, and overall detection accuracy. The dashboard also presents AI-generated verification results, recent analysis history, and system performance, enabling users to monitor the authenticity of news content efficiently and make informed decisions.

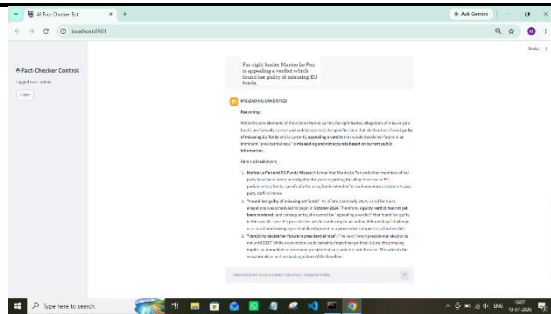


Fig 3: Image Fact Checking Result

This page displays the verification of an uploaded news image. The system classifies the content as Real, Fake, or Misleading/Unverified and provides a detailed explanation highlighting the reasons behind the prediction.

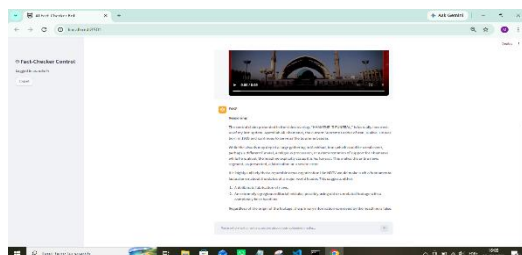


Fig 4: Video Fact Checking Result

This page displays the analysis of an uploaded video for fact verification. The AI system examines the video content and extracts relevant information to determine whether the claim is Fake, Real, or Misleading. It also provides a detailed explanation for the prediction, helping users understand the reason behind the result and verify the authenticity of the video content.

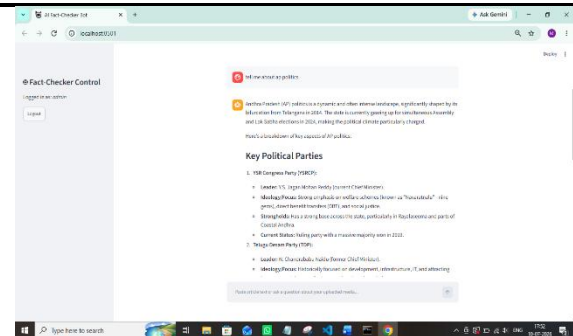


Fig 5: AI Chat Bot Response

This page displays the AI chatbot response to a user's query. The user enters a question in the chat interface, and the AI analyses the input to generate an informative and context-aware response. The chatbot provides clear explanations, helping users quickly obtain reliable information and improving the overall user experience. It also supports interactive communication.

FUTURE SCOPE

The proposed AI-based Fake News Detection System can be enhanced by improving the accuracy and speed of content verification using advanced deep learning models. Future work may include multilingual fake news detection, real-time social media monitoring, and support for additional multimedia formats. The integration of Explainable AI, blockchain-based verification, and continuous model learning can further improve transparency, reliability, and scalability, making the system more effective in combating misinformation across digital platforms.

CONCLUSION

The rapid spread of fake news has become a major challenge in today's digital world, making accurate and timely verification more important than ever. The proposed AI-Based Fake News Detection System offers a practical solution by using Artificial Intelligence (AI), Natural Language Processing (NLP), and Google Gemini AI to analyze text, images, videos, and documents. The system provides users with real-time verification results and clear explanations through an easy-to-use Streamlit interface. By automating the fact-checking process, it helps reduce the time and effort required for manual verification while improving the reliability of online information. Overall, the proposed system provides an efficient, user-friendly, and scalable solution for detecting fakenews. It reduces manual verification effort, improves information reliability, supports informed decision-making, and promotes responsible sharing of digital content.

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