RAPTI ENGINEERING COLLEGE

Ghorahi-16 Saniambapur Sarra , Dang

(Affilitate to Pokhara University)

REPORT ON

"**VerifiAI : Unified AI-Generated Content Detector**"

Dcom

Year III Part II

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Submitted To:

Department of Dcom

Rapti Engineering College

ACKNOWLEDGEMENT:

The successful completion of this project required valuable guidance and assistance from numerous individuals, and we are deeply grateful for their unwavering support throughout this journey.

We would like to extend our sincere appreciation to the Department of Dcom at Rapti Engineering College for providing us with the opportunity to work on the **"VerifiAI Multi-Modal AI Content Detection Web Application"** project. Their provision of resources, guidance, and encouragement enabled us to complete the project on time and to a high standard.

We are especially grateful to our honorable project guide, **Mr Rajan Bhandari** , for his expert guidance, insightful suggestions, and timely feedback, which significantly contributed to the quality and success of our project report. His mentorship was instrumental in shaping our work, and we are thankful for his constant support and dedication.

DECLARATION :

We hereby declare that the project work titled **"VerifiAI Multi-Modal AI Content Detection Web Application"**, submitted to the Department of DCom at Rapti Engineering College, is an original work carried out by us during this project submission. This work has not been submitted to any other institution or university for the award of any degree or diploma.

LETTER OF APPROVAL

Date:2082-03-22

To

The Department of Dcom ,

Rapti Engineering College, Ghorahi-16,

Sarra, Dang

Dear Sir/Madam,

We are writing to express our enthusiastic approval for the project titled **"VerifiAI - Multi-Modal AI Content Detection Web Application."** After conducting a thorough review and evaluation of the system, we are pleased to inform you that it meets all the necessary academic and technical requirements and standards.

The **VerifiAI** application offers a user-friendly and visually appealing interface, enabling users to easily verify text, images, videos, and files for AI-generated content. The system's design is modern and intuitive, ensuring a smooth and accessible experience for all users.

Moreover, the application integrates advanced AI models and web search functionalities, allowing users to fact-check and validate content with or without additional proof. The project prioritizes accuracy, responsiveness, and security while maintaining cross-browser and cross-device compatibility.

We appreciate the effort and dedication shown in developing this impactful project, and we commend the team for delivering a practical solution to a relevant and emerging problem in today's digital landscape.

Thank you for your attention to this matter.

Sincerely,

Santosh Poudel : Project Leader & MERN Stack Developer

- Idea generation and concept design
- Frontend and backend development
- AI model integration and API setup
- UI/UX design and animations
- System architecture and database design
- Testing, debugging, and deployment
- Report writing and documentation

Devraj Kunwar : UI & UX designer and Helper

Yamuna Oli

Nabin Chaudhary

Role : Project Helper

ABSTRACT :

Here, we developed a project titled **VerifiAI Multi-Modal AI Content Detection Web Application**. VerifiAI is designed to help users easily verify whether text, images, videos, or files are generated by artificial intelligence or created by humans. The project was developed to replace traditional, manual methods of checking content authenticity, which are time-consuming, unreliable, and often inaccessible to general users.

This system saves valuable time, increases accuracy, and ensures higher reliability and consistency in content verification. VerifiAI is useful for individuals, educators, researchers, and organizations who need to confirm the originality of digital content before sharing or using it. It allows users to quickly analyze content and receive trustworthy results without needing technical expertise.

Furthermore, this project supports building a safer and more transparent digital environment by reducing the spread of misinformation, scams, and deepfakes. By encouraging responsible content sharing and promoting digital literacy, VerifiAI empowers users to make informed decisions online and fosters a greater understanding of the potential risks and uses of AI-generated media.

Table of Contents:

1. INTRODUCTION :

VerifiAI is an innovative online platform designed to help users verify whether content including text, images, videos, or files has been generated by artificial intelligence or created by humans. The main purpose of this application is to provide a reliable and easy-to-use system for detecting AI-generated content and preventing the spread of misinformation and synthetic media.

With the rapid rise of AI-generated content across social media, websites, and various digital platforms, it has become increasingly difficult for users to distinguish between real and fake information. VerifiAI addresses this challenge by integrating advanced AI detection models and web search functionalities into a single dynamic web application.

This system empowers users to check content authenticity directly online without the need for technical knowledge or manual investigation. It promotes safe and responsible digital interactions, helping protect individuals and organizations from scams, deepfakes, and misleading information.

We developed VerifiAI to create a trusted environment where users can confidently verify content, foster transparency and promote digital literacy. This platform aims to encourage critical thinking and awareness about AI technologies, empowering users to make informed decisions in an increasingly AI-driven world.

2. PROBLEM STATEMENT

EXISTING SYSTEM:

The existing system of verifying content authenticity is largely manual, time-consuming, and often inaccessible to general users. Individuals must rely on personal judgment, scattered online tools, or lengthy research to determine whether text, images, videos, or files are AI-generated or human-created. This process is complex, unreliable, and prone to errors.

Furthermore, existing methods do not provide integrated, real-time analysis or easy-to-understand results, making it difficult for users to confidently verify content before using or sharing it. In the current system, there is no unified platform that combines AI-based detection models with fact-checking and web search capabilities in one place. As a result, users are left vulnerable to scams, misinformation, and deepfakes, which can lead to serious personal, social, and professional consequences.

PROPOSED SYSTEM:

The proposed system, **VerifiAI**, offers several advantages over the existing manual and fragmented approaches. It integrates advanced AI models and web search capabilities to analyze and verify text, images, videos, and files in real time, providing clear and reliable results.

The system features an easy-to-use and visually appealing interface that allows users to check content authenticity without needing any technical expertise. By combining fact-checking and AI response functionalities on a single platform, **VerifiAI** ensures faster, more accurate, and more accessible content verification.

Overall, the proposed system aims to create a safer, more transparent digital environment by empowering users to detect AI-generated content and make informed decisions. It provides a comprehensive, efficient, and user-friendly solution with the potential to significantly reduce the spread of misinformation and increase digital trust.

3. **OBJECTIVE:**

1. To provide users with a reliable and user-friendly platform to verify if digital content (text, images, videos, files) is AI-generated or human-made.
2. To enhance digital literacy by educating users about AI-generated media and its implications.
3. To reduce the spread of misinformation, deepfakes, and scams by enabling accurate content verification.
4. To support researchers, educators, and organizations with trustworthy tools for content authenticity checks.
5. To promote a safer, transparent, and responsible digital environment through AI content detection.

4. FEATURES:

1. **User-Friendly Interface:** Easy to navigate and visually appealing design to help users verify AI-generated content effortlessly.
2. **Multi-Modal Detection:** Supports detection of AI-generated text, images, videos, and files in one platform.
3. **Real-Time Analysis:** Provides instant content verification results to users with high accuracy.
4. **Search & Upload Options:** Users can upload files or paste text for verification, with the ability to review past checks.
5. **Detailed Reports:** Offers comprehensive analysis reports showing the likelihood of AI generation and relevant metadata.
6. **Educational Resources:** Provides users with tips and information about AI-generated media and how to recognize it.
7. **Cross-Platform Access:** Accessible via web on multiple devices to support users anywhere, anytime.

8. **Privacy & Security:** Ensures user data and uploaded content are handled securely and confidentially.

5. SCOPE:

Here are some of the project's scope and application areas.

1. **Global Accessibility:** The platform is designed to be accessible worldwide, supporting users from different countries and regions in verifying digital content authenticity.
2. **Multi-Modal Content Verification:** Supports a wide range of digital content types including text, images, videos, and files for AI-generated detection.
3. **User Base:** Useful for individuals, educators, researchers, journalists, and organizations needing to validate content originality and combat misinformation.
4. **Educational Impact:** Aims to raise awareness and promote digital literacy regarding AI-generated content and its implications.
5. **Real-Time Verification:** Provides quick and reliable analysis results to help users make informed decisions before sharing or using digital content.
6. **Cross-Industry Application:** Applicable across various sectors such as media, education, research, and corporate environments where content authenticity matters.

6. Methodology:

For the development of VerifiAI, we use the **Spiral Model**, which supports continuous feedback, testing, and improvement throughout the project lifecycle. This model allows us to build the system in manageable increments, refining features based on user input and testing results to ensure accuracy and usability.

Key steps include:

1. **Requirement Analysis:** Identify user needs and key functionalities for AI content detection across multiple media types (**text, images, videos, files**).

2. **Design:** Develop system architecture, including AI detection models, frontend UI/UX, and backend infrastructure.
3. **Implementation:** Build core features in phases starting with text detection, then adding image and video analysis capabilities.
4. **Testing:** Perform rigorous testing on each iteration for accuracy, performance, and user experience, incorporating feedback to refine the system.
5. **Deployment:** Deploy stable versions for real-world use, monitoring system performance and user interactions.
6. **Maintenance & Enhancement:** Continuously update models and features to improve detection accuracy and support emerging AI-generated content types.

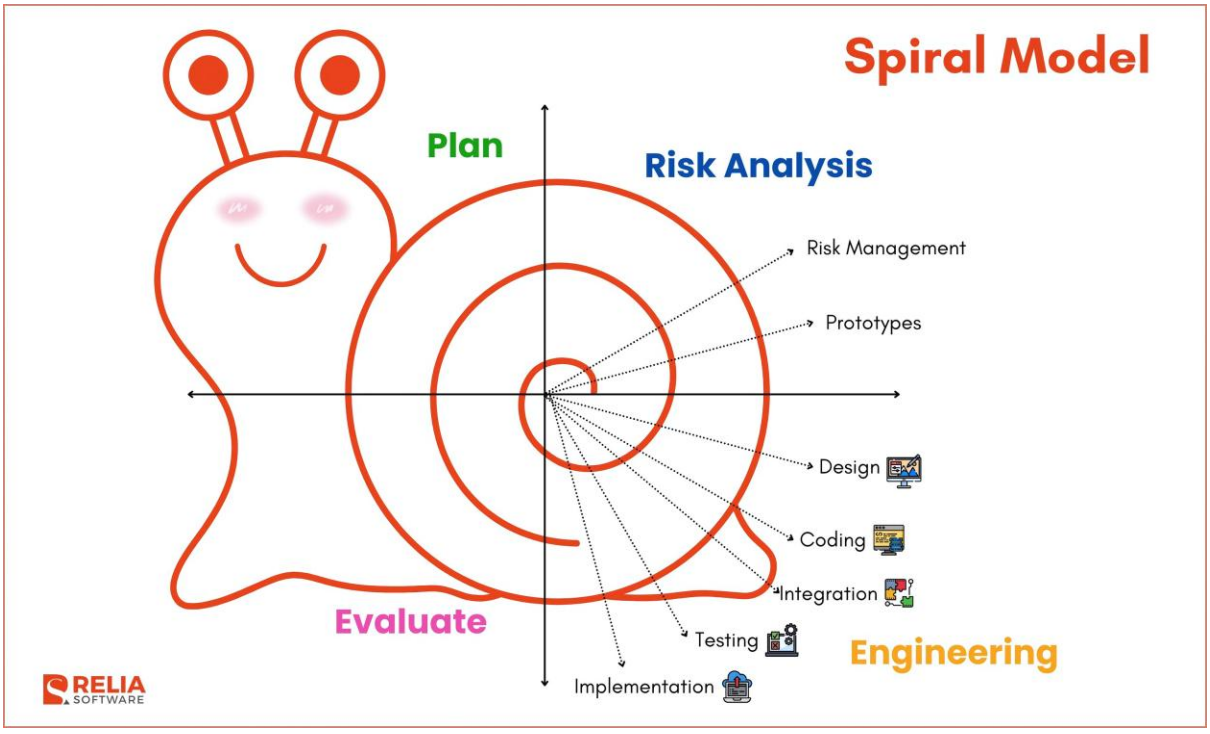

Fig: Spiral model

7.REQUIREMENT DOUMENT (functional and non-functional)

Functional Requirements:

1. **User Registration and Authentication**
    - Users can create accounts and log in securely.
    - Support for password recovery and secure session management.
2. **Content Upload and Input**
    - Users can upload text, images, videos, or files for AI content verification.
    - Support copy-pasting text for quick checks.
3. **AI Content Detection**
    - Analyze uploaded content and detect whether it is AI-generated or human-created.
    - Provide confidence scores or likelihood percentages.
4. **Multi-Modal Analysis**
    - Support detection for multiple content types (text, images, videos, files) in a unified interface.
5. **Result Presentation**
    - Display detailed verification results with explanations and metadata.
    - Allow users to download or save reports.
6. **History and Logs**
    - Maintain user-specific history of content checks for future reference.
7. **Educational Resources**
    - Provide information and tips about AI-generated media and digital literacy.
8. **Admin Panel**
    - Admins can monitor system usage, manage users, and update detection models.

Non-Functional Requirements:

1. **Performance**
    - Real-time or near real-time response for content verification requests.
    - Scalable system to handle multiple concurrent users efficiently.
2. **Usability**
    - Intuitive, user-friendly interface accessible on desktop and mobile devices.
3. **Security**
    - Secure data transmission using HTTPS.
    - Protect user data privacy and comply with relevant data protection regulations.
4. **Reliability and Availability**
    - System uptime should be at least 99.5%.
    - Robust error handling and fallback mechanisms.
5. **Maintainability**
    - Modular codebase to support easy updates and improvements.
    - Clear documentation for developers and users.
6. **Compatibility**
    - Support modern browsers and platforms without requiring additional plugins

8. System Design:

ER-Diagram:

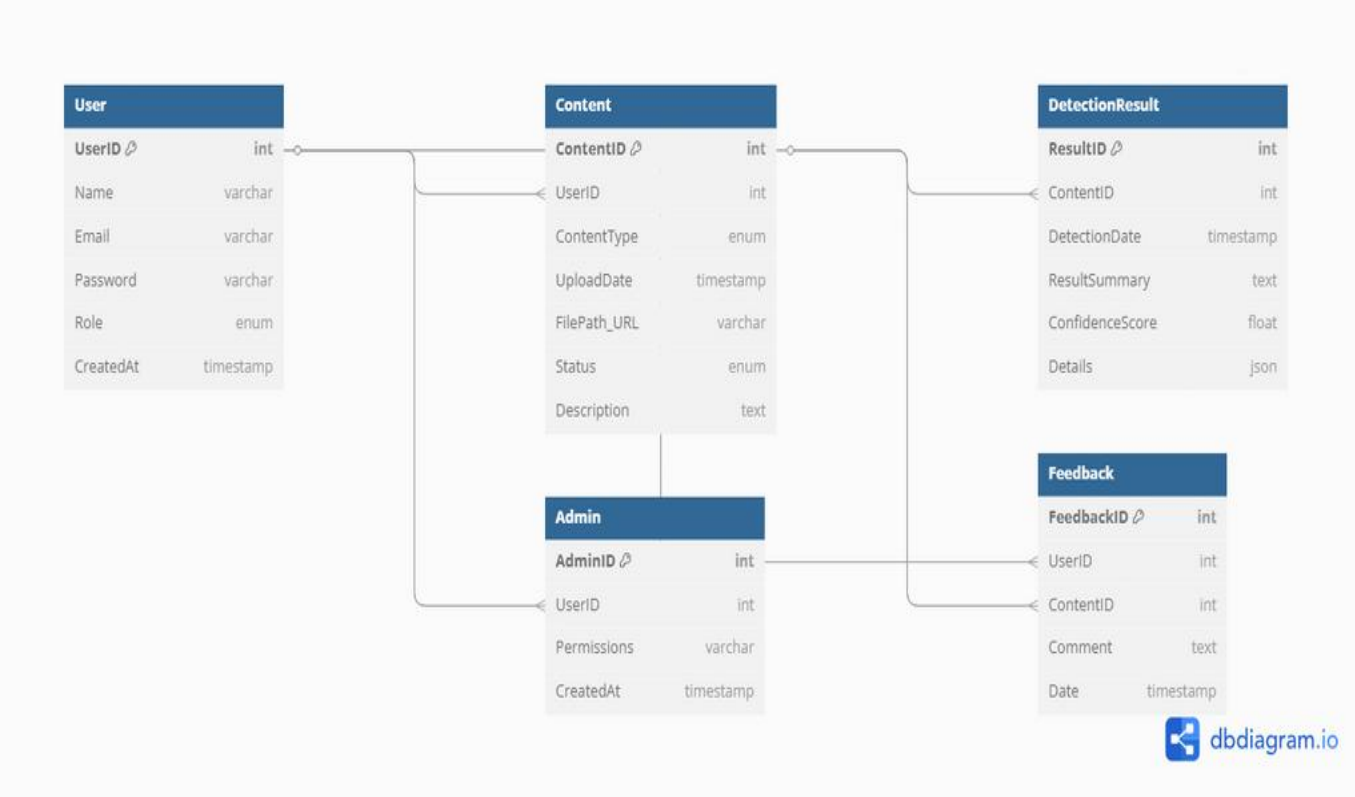

Fig: ER Diagram

USE CASE DIAGRAM:

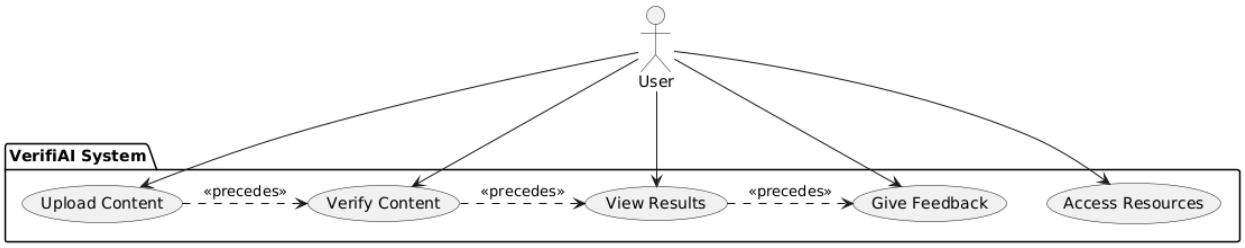

Fig: Use case diagram

9. DEVELOPMENT:

GANTT CHART:

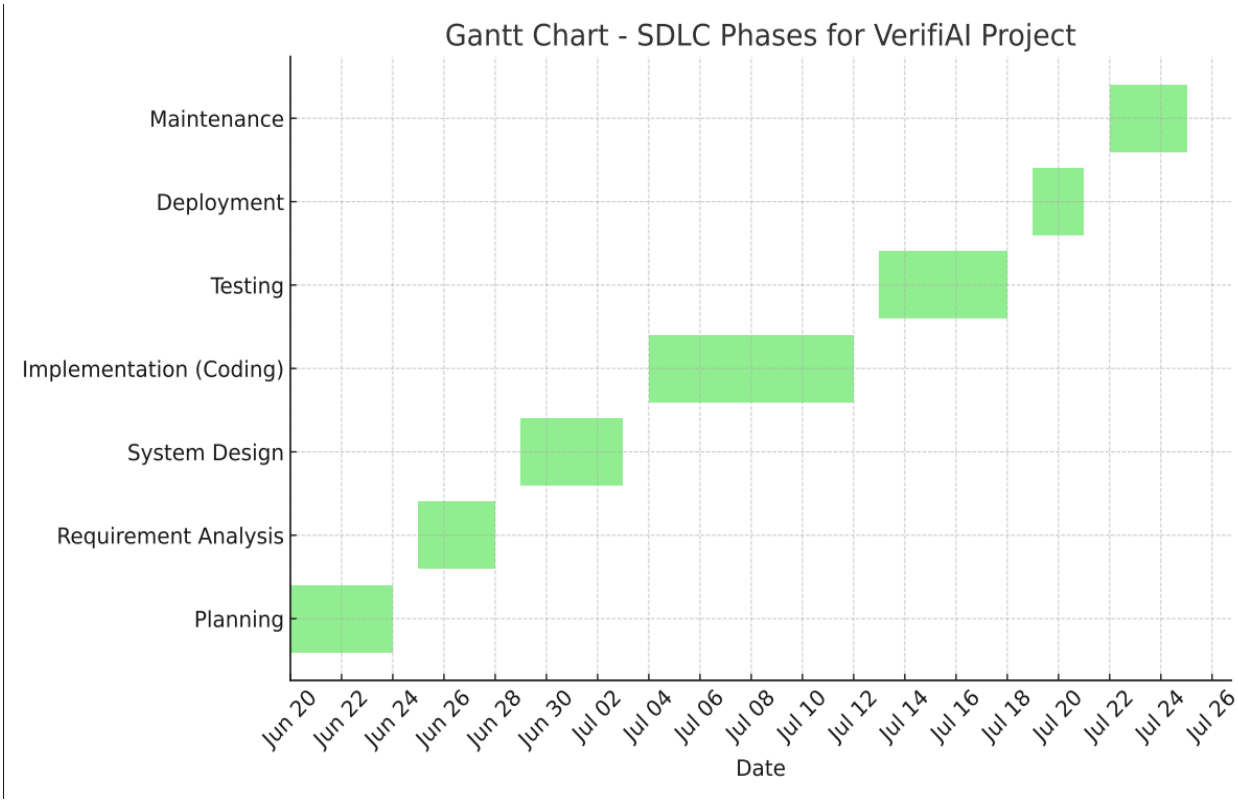

Fig: Gantt Chat

10. Testing and Deployment:

The testing and deployment phase is critical to ensure that VerifiAI is fully functional, accurate, secure, and user-friendly before public release.

Testing Activities:

1. **Functional Testing:**
    - Verify that core features such as content upload, AI detection for text, images, videos, and files, and result reporting work as intended.
    - Test user history tracking, and educational resource access.
2. **Usability Testing:**
    - Evaluate the user interface and overall user experience to ensure ease of navigation, clarity of results, and accessibility across devices and browsers.
3. **Performance Testing:**
    - Measure response times for content verification and ensure the system can handle multiple simultaneous users without degradation.
    - Test real-time detection accuracy and processing speed.
4. **Security Testing:**
    - Check secure data transmission via HTTPS and proper handling of user data.
    - Conduct vulnerability assessments to protect against common attacks and ensure compliance with privacy regulations.
5. **Cross-Platform Testing:**
    - Ensure compatibility and consistent behavior across different browsers (Chrome, Firefox, Safari, Edge) and devices (desktop, mobile, tablets).

Deployment and Maintenance:

1. After thorough testing and fixing identified issues, VerifiAI is deployed on a reliable cloud hosting platform.
2. Regular backups, security monitoring, and performance tracking are conducted to maintain system health.
3. Periodic updates and patches are released to improve detection models, fix bugs, and introduce new features based on user feedback and emerging AI trends.
4. User engagement and system performance are continuously analyzed to identify improvement opportunities.
5. Feedback mechanisms allow users to report issues or suggest enhancements, ensuring the platform evolves with user needs.

Overall, the rigorous testing and deployment process guarantees that VerifiAI provides accurate, secure, and accessible AI content verification to users worldwide.

11. Project Result:

The VerifiAI Multi-Modal AI Content Detection Web Application has been successfully developed and deployed. The project is now live and accessible to users globally through the

santosh2.com.np.

Key outcomes include:

- A fully functional Next.js web application that enables users to verify whether text, images, videos, or files are AI-generated or human-created.

- A responsive, user-friendly interface optimized for both desktop and mobile devices.
- Real-time content analysis with detailed verification reports.
- Secure user authentication and data handling.
- Continuous monitoring and maintenance to ensure reliable performance and user satisfaction.

Hosting the application on a custom domain provides users with seamless and easy access, reinforcing the project's goal to make AI content verification widely available and accessible. This deployment marks a significant milestone in delivering a practical solution to combat misinformation and enhance digital literacy.

12. FUTURE ENCHANCEMENT

1. **Advanced Video Detection:**
   - Integration of cutting-edge AI models to analyze videos for signs of AI generation or manipulation, such as deepfakes, synthetic media, and CGI alterations.
2. **Audio Detection Capabilities:**
   - Development of audio verification features to detect AI-generated voices, speech synthesis, and audio deepfakes, expanding the platform's multi-modal analysis.
3. **Comprehensive File Detection:**
   - Support for a wider range of file types beyond images and text, including PDFs, presentations, and other document formats, to identify AI-generated or manipulated content.
4. **Faster and More Efficient Processing:**
   - Implementation of optimized algorithms and hardware acceleration to provide near real-time analysis results across all supported content types.
5. **Improved Security and Authentication:**
   - Adoption of advanced authentication mechanisms, such as multi-factor authentication (MFA) and biometric options, to enhance user account security and data protection.

6. **Enhanced User Experience:**
    - Continuous UI/UX improvements based on user feedback to create a more intuitive, accessible, and engaging platform.
7. **Regular Updates and AI Model Training:**
    - Ongoing training and updating of detection models with the latest AI-generated content patterns to maintain high accuracy and adapt to emerging technologies.

13. CONCLUSION—

VerifiAI stands at the forefront of addressing one of today's most pressing digital challenges the rapid proliferation of AI-generated content and misinformation. By combining advanced multi-modal AI detection techniques with an intuitive and accessible platform, VerifiAI empowers users worldwide to confidently discern the authenticity of digital content across text, images, videos, and files.

This project not only delivers a powerful tool for verification but also fosters greater digital literacy and responsibility in an increasingly AI-driven world. Through ongoing innovation, rigorous testing, and a user-centric approach, VerifiAI aims to become an indispensable resource for individuals, educators, researchers, and organizations committed to truth and transparency online.

In essence, VerifiAI represents a critical step toward building a safer, more trustworthy digital ecosystem one where users are equipped to navigate the complex landscape of AI-generated media with clarity and confidence.

Best regards,

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