

Trust- Flow: Fake Product and Reviews Detection

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Abstract- TrustFlow – AI-Based Fake Review and Product Authenticity Detection Web Application is a web-based intelligent platform developed to assist users in identifying fake product reviews and verifying product authenticity through artificial intelligence. The system provides a centralized digital interface where users can easily paste product reviews or upload product descriptions along with images for authenticity analysis. The primary objective of the platform is to reduce the impact of misleading online information and improve trust in digital purchasing decisions through an accessible and user-friendly web solution. The application addresses common challenges faced by online consumers, including the presence of manipulated reviews, counterfeit product promotions, and lack of reliable verification mechanisms. By integrating modern web technologies and AI-based analysis models, the system enables real-time processing of textual and visual product data, accurate authenticity prediction, and clear result visualization. The structured login system, secure data handling, and intuitive navigation ensure that users can efficiently interact with the platform without requiring advanced technical knowledge. TrustFlow is developed using HTML, CSS, and JavaScript for frontend interface design, PHP for backend processing, and MySQL database management through phpMyAdmin within the XAMPP environment. Artificial intelligence processing is implemented using a Python backend integrated with Ollama and the LLaVA 7B multimodal model for review and product authenticity detection. These technologies ensure system scalability, reliability, and efficient performance during real-time usage. The platform also includes user activity tracking, authentication features, and modular system architecture to support future enhancements. Overall, TrustFlow contributes to improving digital consumer awareness by providing a transparent, intelligent, and efficient mechanism to detect fake reviews and suspicious products. The system aims to enhance online shopping confidence, support informed purchasing decisions, and promote the responsible use of AI-driven verification solutions in modern e-commerce environments.

Keywords: Fake Review Detection, Product Authenticity Verification, Artificial Intelligence, Web Application, PHP Backend, MySQL Database, XAMPP Server, Ollama AI Integration, LLaVA-7B Model, Consumer Trust Systems,

Online Product Verification, Multimodal AI Analysis, Digital Commerce Security.

I. INTRODUCTION

With the rapid growth of e-commerce platforms and online marketplaces, customers increasingly rely on product reviews and digital product descriptions before making purchasing decisions. However, the presence of fake reviews and counterfeit product listings has created significant challenges in maintaining trust, transparency, and authenticity in online transactions. Traditional methods of manual verification are time-consuming, inconsistent, and often fail to detect sophisticated fraudulent content. Therefore, there is a growing need for intelligent digital systems that can automatically analyze and verify the authenticity of online reviews and products.

The TrustFlow– Fake Review and Product Detection Web Application is developed to provide an AI-powered digital platform that assists users in identifying whether a product review or product listing is genuine or fake. The system enables users to securely log in, paste review text, upload product descriptions and images, and receive AI generated authenticity results through a simple web interface. This approach reduces dependency on manual judgment and enhances user confidence in digital purchasing environments.

The system integrates modern technologies such as HTML, CSS, and JavaScript for frontend interaction, PHP for backend processing, MySQL database management using phpMyAdmin within the XAMPP environment, and Python-based AI integration using Ollama with the LLaVA 7B model. These technological components ensure smooth website performance, secure user authentication, reliable data handling, and intelligent analysis of textual and visual inputs.

Overall, TrustFlow aims to improve transparency and security in digital commerce by providing an automated, scalable, and user-friendly platform for fake review detection and product authenticity verification. By enabling faster content validation and structured result visualization, the system contributes to building trust in online marketplaces and supports users in making informed purchasing decisions.

II. LITERATURE REVIEW

The increasing adoption of online shopping platforms has led to the emergence of several digital systems aimed at improving trust and authenticity in product transactions. Various research studies highlight the importance of automated fake review detection mechanisms in reducing misinformation and enhancing consumer confidence. Traditional review filtering techniques often rely on statistical analysis or rule-based classification, which may fail to accurately detect complex patterns of fraudulent reviews.

Existing research on product authenticity verification systems emphasizes the role of artificial intelligence and natural language processing in analyzing textual data and identifying misleading product descriptions. Some platforms also utilize image processing and multimodal AI models to enhance detection accuracy. These systems demonstrate the effectiveness of combining textual and visual analysis techniques for detecting counterfeit or deceptive product information in digital marketplaces.

Several studies also focus on the importance of secure web-based architectures and database management systems in handling sensitive user data and analysis results. Technologies such as PHP-based backend development and MySQL database integration are widely used for building scalable and reliable web applications. These platforms support user authentication, structured data storage, and efficient communication between frontend interfaces and AI processing modules.

Despite advancements in fake review detection technologies, research indicates that many existing systems still face challenges related to usability, real time AI integration, and comprehensive multimodal analysis. These limitations highlight the need for more

intelligent, user-friendly, and integrated web solutions. The TrustFlow system is proposed as an improved digital verification platform that combines AI driven review analysis, product authenticity checking, and secure user management to enhance trust and transparency in online purchasing environments.

III. PROPOSED SYSTEM

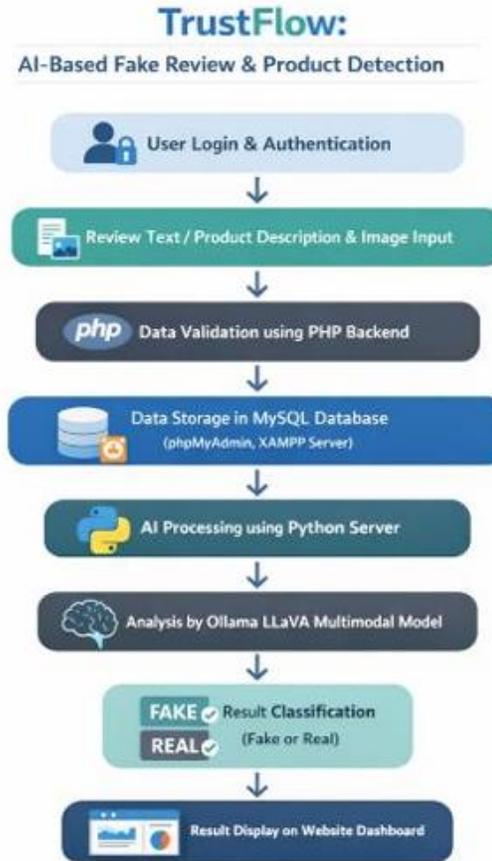
The proposed system TrustFlow– Fake Review and Product Detection Web Application is developed to provide an intelligent digital platform where users can verify the authenticity of online reviews and product listings. The system focuses on improving consumer trust, reducing misinformation, and enhancing security in e-commerce environments.

- The application provides a centralized web interface where users can paste product reviews or upload product descriptions along with images for authenticity verification.
- Users can securely register and log in using authentication mechanisms implemented through PHP and MySQL database management.
- The system processes textual review inputs and product data using AI models integrated via Python backend services.
- Ollama AI with the LLaVA 7B multimodal model analyzes both textual and visual information to classify content as genuine or fake.
- The application stores user activity data and analysis records in a structured MySQL database managed through phpMyAdmin within the XAMPP server environment.
- The system displays AI-generated results clearly on the website, helping users understand whether a review or product listing is authentic.
- A simple and responsive user interface is provided to ensure accessibility for users with varying levels of technical knowledge.
- The proposed system reduces dependency on manual verification methods and improves digital security in online marketplaces.
- Overall, the system promotes transparency, enhances consumer confidence, and supports safer online purchasing decisions.

IV. METHODOLOGY

The development of the TrustFlow Fake Review and Product Detection WebApplication follows a structured methodology to ensure efficient system design, implementation, and performance.

- Initially, system requirements were identified by analyzing challenges related to fake reviews, counterfeit product listings, and lack of trust in digital marketplaces.
- A systematic design approach was adopted, including website navigation flow, database schema design, and AI processing workflow to define overall system functionality.
- The front-end interface was developed using HTML, CSS, and JavaScript to provide a responsive and interactive user experience.
- Backend functionalities such as user authentication, review submission, product verification requests, and result processing were implemented using PHP programming language.
- MySQL database integration through phpMyAdmin was used to manage user records, login credentials, and analysis data efficiently.
- AI model integration was implemented using a Python server that communicates with Ollama and the LLaVA 7B model to perform intelligent content analysis.
- Functional testing was conducted to verify system accuracy, database consistency, and user interface usability across different scenarios.
- Finally, performance optimizations and security enhancements were applied to ensure stable system operation and reliable AI-based verification results.



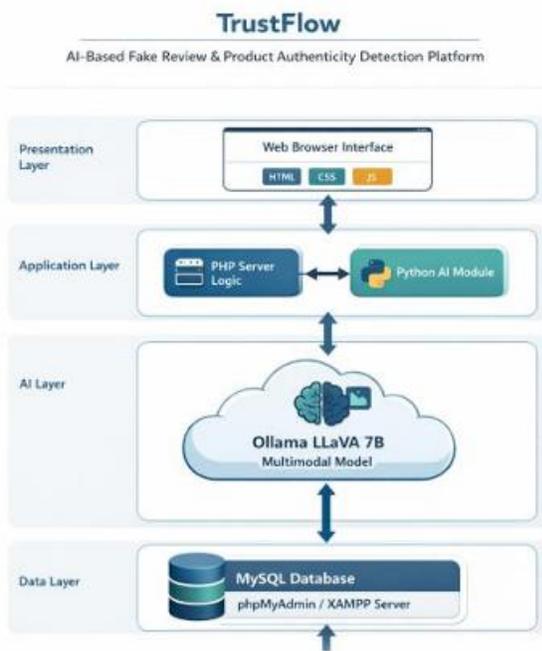
V. SYSTEM ARCHITECTURE

The architecture of the TrustFlow Fake Review and Product Detection WebApplication follows a structured client-server model that integrates web technologies, database management, and artificial intelligence processing. The system is designed to ensure secure communication between user interfaces, backend services, and AI analysis modules while maintaining reliability and scalability.

- The presentation layer consists of a responsive web interface developed using HTML, CSS, and JavaScript, allowing users to log in, submit review text, upload product descriptions and images, and view authenticity results.
- The application layer is implemented using PHP, which manages authentication, request processing, session handling, and communication between the frontend and AI backend services.
- A Python-based AI processing module communicates with the Ollama platform to utilize

the LLaVA 7B multimodal model for analyzing textual reviews and product images.

- The data storage layer uses a MySQL database managed through phpMyAdmin in the XAMPP environment to securely store user credentials, activity logs, and analysis results.
- Secure data flow is maintained through structured API communication between PHPscripts and the AI processing server, ensuring accurate result generation and efficient system performance.
- The modular architecture enables easy maintenance, future scalability, and integration of additional AI verification features.



VI. APPLICATIONS

The TrustFlow system has wide applicability in the digital commerce and cybersecurity domains, supporting users in verifying authenticity of online content.

- **Fake Review Detection** The system helps online shoppers identify misleading or fraudulent reviews, enabling more informed purchasing decisions.
- **Product Authenticity Verification** Users can analyze product descriptions and images to

determine whether a listing is genuine or suspicious.

- **E-Commerce Platform Support** TrustFlow can assist online marketplaces in maintaining content quality and reducing fake product promotions.
- **Consumer Awareness and Digital Trust** The application promotes transparency in online transactions by providing automated AI-based verification.
- **Cybersecurity and Fraud Prevention** The platform can be utilized as a digital tool to detect deceptive marketing practices and counterfeit product listings.
- **Academic and Research Applications** TrustFlow can be used in educational environments for demonstrating real world AI integration in web-based verification systems.

VII. ADVANTAGES

The TrustFlow web application offers several technological and practical advantages in enhancing digital transaction security.

- Provides AI-powered analysis of both textual reviews and product images.
- Offers a simple and user-friendly interface for quick authenticity verification.
- Ensures secure user authentication and structured data management using PHP and MySQL.
- Supports multimodal content evaluation through integration of Ollama and the LLaVA 7B model.
- Reduces dependency on manual verification and improves decision making efficiency for online buyers.
- Features a scalable modular architecture that allows future system expansion.

VIII. CHALLENGES AND LIMITATIONS

Despite its benefits, the TrustFlow system has certain limitations that can be addressed in future improvements.

- Requires stable internet connectivity for AI processing and server communication.
- Accuracy of results may depend on the quality and completeness of user provided inputs.

- Limited integration with live e-commerce APIs and real-time marketplace databases.
- Currently optimized for specific AI models and English-language review content.
- Performance may vary depending on server load and AI model response time.

IX. FUTURE SCOPE

The TrustFlow system has strong potential for further development and enhancement in the field of digital verification technologies.

- Integration with real-time e-commerce platforms and product databases for live authenticity checking.
- Development of a mobile application version for increased accessibility and user convenience.
- Implementation of advanced deep learning models to improve detection accuracy and contextual reasoning.
- Addition of multilingual support for global usability across diverse user groups.
- Inclusion of automated scam alert systems and marketplace monitoring dashboards.
- Expansion of analytics features for trend analysis and fraud pattern detection.

X. CONCLUSION

The TrustFlow– Fake Review and Product Detection Web Application demonstrates the effective integration of artificial intelligence and modern web technologies in addressing real-world challenges related to online trust and digital fraud prevention. By combining PHP-based backend development, MySQL database management, Python based AI processing, and Ollama LLaVA multimodal analysis, the system provides a reliable and intelligent platform for authenticity verification. The structured architecture ensures secure data handling, scalable performance, and user-friendly interaction, making the application suitable for real-world deployment in digital commerce environments. TrustFlow contributes to enhancing transparency, improving consumer confidence, and promoting safer online purchasing experiences.

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