

SmartMail: An Intelligent Email Responder Powered by Gemini API and LangChain

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Abstract— During a time when digital communication is both ubiquitous and essential, email continues to be a foundation of professional and personal communication. Still, the increasing number of emails tends to result in communication overload, decreased productivity, and delayed reaction.

This study proposes Jarvis-Mail, an AI email assistant that automates the process of writing emails with intelligent automation. Jarvis-Mail stores and encrypts user information, memorizes previous interactions, and creates tailored email responses with the user's tone and message intent. Contrary to standard auto-reply engines, Jarvis-Mail gives users control by making them check and approve messages before delivery.

This promotes content accuracy, relevance, and suitability while ensuring user control. The paper discusses the architecture of the system, chief challenges in AI-based personalization and data protection, and offers a user-friendly solution that balances automation with accountability.

Index Terms— AI-based email system, personalized email response, email automation, smart assistant, natural language processing, user behaviour analysis, context-aware communication, machine learning, human-AI collaboration, data privacy.

I. INTRODUCTION

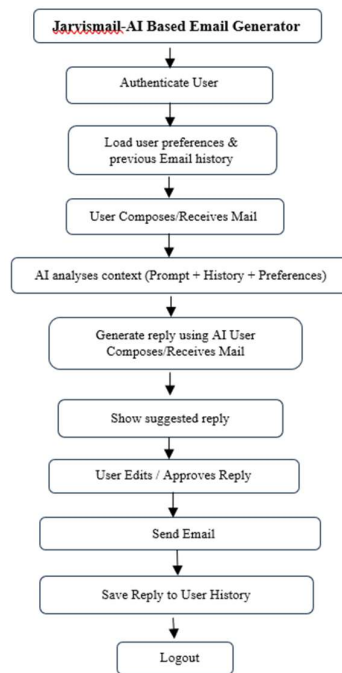
In the present era of digital connectivity, email still continues to be the most important means of communication, both corporate and social. With growing volumes of emails sent and received on a daily basis, users tend to struggle with their inbox management, composing replies, and maintaining timely communication. As artificial intelligence evolves, incorporating AI into the email system holds promising potential to alleviate the communication burden.

Jarvis-Mail is a theoretical AI-based email assistant that is meant to assist users in automating email writing without human intervention while ensuring security, personalization, and user control. In contrast to conventional auto-responders or templates, Jarvis-Mail seeks to learn the behavior of individual users, mirror their writing style, and offer intelligent suggestions that are based on previous interactions.

This system also stresses human-in-the-loop verification, which guarantees that the user has full control over the final product before dispatch.

II. METHODOLOGY/EXPERIMENTAL

Flowchart:



II. ALGORITHM

A. User Login & Data Entry:

The user logs in via a secure interface and enters required information (e.g., preferences, previous email templates).

B. Data Encryption & Secure Storage:

Sensitive data, e.g., Aadhar numbers, are encrypted with the use of tools such as AWS KMS or Firebase

C. AI-Powered Email Generation:

Utilizing machine learning algorithms such as GPT, the system formulates contextually correct and individualized drafts of emails.

D. Template Matching

The system searches the database for comparable emails, drawing from past-used templates for efficacies.

E. Review & Approval

After the email is formulated, the user inspects it and can edit before sending.

III. LITERATURE REVIEW

As email volumes grow, researchers have focused on using AI, machine learning, and NLP to automate email management and improve productivity.

Arsovski et al. [1] developed a framework combining rule-based reasoning, sentiment analysis, and classification for corporate email automation. Ashwini et al. [2] utilized LLaMA and LangChain to build a customizable email-writing tool for marketing applications. Deb et al. [3] proposed a model offering multiple reply suggestions tailored to email tone and context.

Kannan et al. [4] pioneered Google's Smart Reply, using neural networks for quick, context-aware email responses.

Beyond email, related innovations include IoT-based vehicle parking systems [5], RFID-based space detection [6], and smart parking via mobile apps and sensors [7]. Migdadi et al. [8] explored online parking in Jordan, showing how real-time systems can translate to email contexts. Al-Alwani [9], [10] introduced probabilistic models for personalized auto-replies. Miura et al. [11] enhanced formal email writing with AI-generated follow-up questions. Kawuri et al. [12] focused on user privacy in auto-response systems via secure cloud storage.

A. Results and Discussions

Development and release of Jarvis-Mail created a working web-based AI email assistant. This part of the paper emphasizes major features of the system in real-time screenshots and talks about the real-world execution of every aspect.

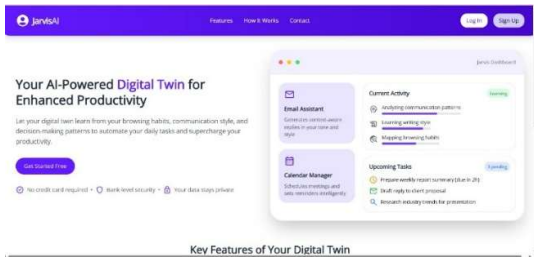


Fig 1. The JarvisAI interface, highlighting its AI-powered digital twin features for personalized productivity enhancement

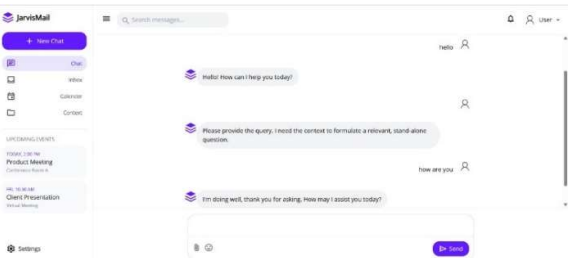


Fig 2. JarvisMail chat interface for AI-assisted user interaction and scheduling

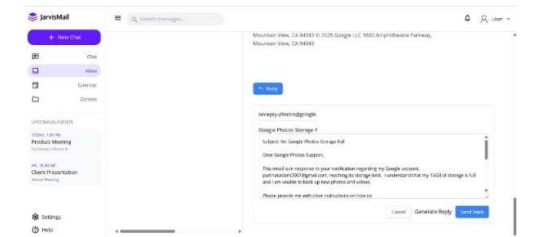


Fig 3. JarvisMail inbox interface with AI-powered email reply generation

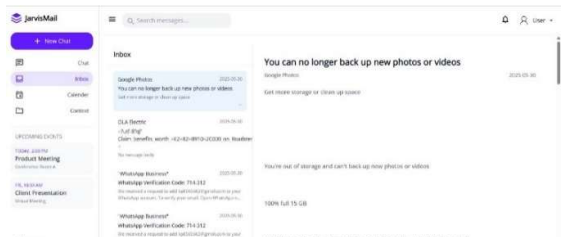


Fig 4. JarvisMail inbox view displaying a full storage alert from Google Photos

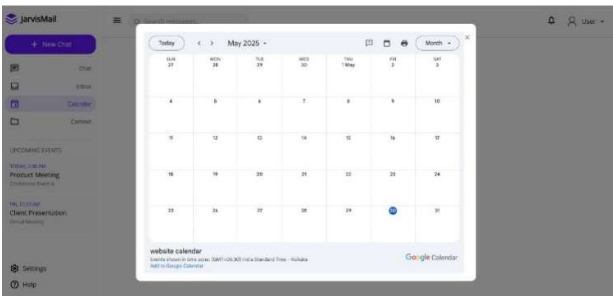


Fig 5. JarvisMail Calendar View showing May 2025 with an event marked on the 30th.

IV. CONCLUSION

This sophisticated AI-based email generator is not merely an automation tool for communication—it is a revolutionary method of handling emails. Through intelligent learning from user behaviour, historical interactions, and personal tastes, the system dynamically adjusts to produce highly tailored and context-specific email drafts. From writing professional replies, sorting incoming emails, or recommending best times for sending follow-up emails, the AI optimizes productivity through smart automation.

In addition, this solution focuses considerably on security and data integrity. By incorporating secure storage procedures and encryption guidelines, it makes sure that all user communication and data are secure from any unauthorized access. The outcome is a complete, user-focused platform which not only streamlines the management of email but also protects sensitive data.

With the effortless integration of cutting-edge artificial intelligence and strong security infrastructure, this system provides a wiser, quicker, and safer method of managing digital communication—enabling users to do more with meaningful relationships and less with repeated tasks.

FUTURE SCOPE

The current version of Jarvis-Mail lays a strong foundation for AI-driven email automation, but there is ample opportunity for further advancement. One significant area of growth is the integration of multilingual support, which would make the system more inclusive and accessible to users from different linguistic backgrounds.

Additionally, enhancing the AI's ability to understand deeper context and conversational history through more advanced NLP models can lead to more accurate and nuanced email suggestions. Another valuable direction is incorporating sentiment and tone analysis, allowing users to choose or adjust the emotional tone of a message—such as making it more professional, friendly, or persuasive—based on the situation.

Moreover, connecting Jarvis-Mail with other productivity tools like calendars, task managers, and communication platforms could enable features like automated meeting scheduling, follow-up reminders, and cross-platform communication. These enhancements would transform Jarvis-Mail from a smart email assistant into a comprehensive productivity companion.

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