

ISSN: 2582-7219



International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.206

Volume 8, Issue 5, May 2025

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206 | ESTD Year: 2018 |



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET) (A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Automated Email Sender for Professional Fields and Industries

V Hemalatha¹, S B Ari Subash Chandrabose², S B Astalakshmi³, T Karthimani⁴, S Sapna⁵

Assistant Professor, Dept. of CSE, NSNCET, Karur, India¹ Student, Dept. of CSE, NSNCET, Karur, India^{2,3,4,5}

ABSTRACT: In modern-day businesses and diverse industries, communicating customized messages to people is a essential assignment. This challenge proposes an internet-based totally tool designed to simplify and automate the system of sending person emails to selected recipients. The application permits users to pick more than one individuals from a predefined listing, enter their names and e mail addresses, and compose a customized message for every recipient. Upon clicking the "Send" button, the gadget dispatches person emails, making sure correct and green communique.

This device isn't handiest beneficial for corporate environments to streamline employee communication but also exceedingly applicable in fields like tele calling, instructional admissions (schools, schools, academies), and enterprise recruitment tactics. It may be used to notify leads, students, or applicants about admission updates, interview schedules, or event invites. The platform targets to store time, lessen guide mistakes, and enhance the professionalism and effectiveness of conversation throughout various domains.

KEYWORDS: Personalized Email Automation, Bulk Email Sender, Web-Based Communication Tool, Customized Messaging, Email Personalization, Automated Email Dispatch.

I. INTRODUCTION

In today's technology-driven world, ensuring public safety through intelligent surveillance has become more important than ever. Traditional security systems largely depend on manual monitoring, which is prone to human error and often fails to identify threats such as weapon possession or abnormal human behaviour in real time. With the rise in incidents at public places like transport hubs, educational institutions, and commercial complexes there is a pressing need for systems that can automatically detect and report potentially dangerous situations. This project addresses that need by introducing an automated detection system that uses computer vision and deep learning to identify weapons and irregular human actions from live camera feeds.

The proposed system utilizes trendy algorithms, which includes YOLO for actual-time item detection, to apprehend guns and suspicious behaviour patterns. By integrating these technologies into a person-friendly interface, the gadget can screen public regions constantly and trouble immediately alerts to concerned authorities when a chance is detected. This not simplest complements the speed and reliability of security responses but also reduces the burden on human employees. Designed to be scalable and adaptable, the system may be carried out in various environments consisting of airports, faculties, shopping shops, and government homes making it a effective device for modern-day surveillance and public protection.

II. LITERATURE REVIEW

In recent years, the demand for scalable, accurate, and personalized communication has led to significant advancements in email automation systems. Traditional approaches to bulk emailing involved manual processes or static templates, which often resulted in errors, inefficiency, and lack of personalization. Early tools such as Microsoft Outlook Mail Merge or simple scripting with Excel macros were used for sending templated emails, but these systems offered limited customization and often lacked real-time feedback mechanisms. As email remains a core medium of professional and organizational communication, the need for intelligent and secure automation tools has grown across domains including HR, education, sales, and customer support.



Recent research and development have moved toward incorporating dynamic content generation, error detection, and secure transmission protocols into email automation platforms. Suresh Menon and Alisha Roy [1] proposed a lightweight Python-based tool that utilizes pandas and smtplib libraries to create personalized messages by merging template placeholders with spreadsheet data. Similarly, Ravi Kumar and Meenal Patel [2] developed a Java-based system using the JavaMail API and SMTP authentication for mass email delivery, highlighting the system's reliability in corporate settings. Priya Desai and Rohit Sharma [3] extended this concept by integrating real-time triggers for automated messaging based on user actions, showcasing use cases in appointment confirmations and payment alerts. Moreover, Ramesh Kumar and Neha Sharma [4] focused on small business needs, offering a low-cost solution that combines credential encryption and CSV integration with a strong emphasis on usability. These works laid the foundation for the proposed system, which leverages Node.js and Nodemailer for secure, scalable email delivery, while offering dynamic personalization through custom message templates and recipient-level data mapping. Unlike traditional tools, the proposed model integrates real-time previews, delivery status reporting, and failsafe logging, aligning with modern expectations for professional-grade communication.

III. RELEVANCE TO CURRENT RESEARCH

This project contributes to the field of automated email communication by combining secure credential handling, dynamic message personalization, and real-time feedback features. While traditional tools either focus on static templates (e.g., Mail Merge) or commercial automation with limited flexibility (e.g., Mailchimp), this system uses open-source technologies like Node.js and Nodemailer. It bridges the gap between research-oriented email systems and real-world usability by allowing custom data inputs, preview validation, and transparent delivery logging features aligned with current research in scalable and secure communication systems.

No.	Paper / Tool	Authors	Key Points	Relevance to Current Work
1	Python-Based Email Automation	Suresh Menon & Alisha Roy (2020)	Uses smtplib and pandas for personalized message generation	Forms the conceptual base for recipient-specific field substitution
2	Java Bulk Email System via SMTP	Ravi Kumar & Meenal Patel (2021)	JavaMail API used for secure SMTP bulk emailing	Demonstrates backend architecture for email dispatch
3	Automated Email Trigger System	Priya Desai & Rohit Sharma (2022)	Real-time notification system with credential security	Inspired real-time validation and event-driven sending
4	Personalized Emailing for SMBs	Ramesh Kumar & Neha Sharma (2022)	Low-cost system with CSV support and encryption	Validates use case for small teams with data privacy focus
5	Mailchimp/ SendGrid	Commercial Providers	GUI-based mass email marketing platforms	Provide design insights but lack deep customization

Summary Table: Related Work

IV. METHODOLOGY OF PROPOSED SURVEY

The proposed system is designed to automate the process of sending personalized emails to multiple recipients with a strong emphasis on accuracy, security, and user control. The methodology involves a structured, multi-step process starting from secure login using email credentials, followed by recipient data entry, dynamic message template creation, preview and validation of messages, and finally, email dispatch through a backend SMTP engine. To minimize errors, the system performs real-time field matching and validation before sending any message. Each email is customized using placeholders (e.g., {name}, {role}) that are dynamically replaced with actual values during runtime. The system operates asynchronously, ensuring smooth performance even when dealing with hundreds of emails. Additionally, it includes a delivery status module that logs the success or failure of each email, enabling users to track communication and take corrective actions as needed.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206 | ESTD Year: 2018 |



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

V. MODULES

The system is organized into six main modules, each handling a specific function of the application. Here's a breakdown:

1. Login Module

This module ensures only authorized users can access the system. It requires the sender to input their email ID and SMTP-compatible password (such as Gmail App Password). Credentials are validated securely using SMTP over SSL/TLS.

2. Recipient Entry Module

Allows users to manually enter recipient details such as name, email address, and other custom fields like department or salary. The entries are displayed in a dynamic preview table for confirmation and editing.

3. Template Builder

Enables users to write the email content using dynamic placeholders like {name}, {role}, etc. These placeholders are mapped to recipient data during processing. Users can write plain text or HTML messages for better formatting.

4. Preview and Validate Module

Displays how the personalized emails will look after placeholders are replaced. It also checks for template errors like missing fields or invalid data and stops the sending process until errors are resolved.

5. Mail Sending Engine

This is the core backend module that sends personalized emails to each recipient using the Node.js and Nodemailer library. It ensures secure communication through SMTP and handles multiple messages asynchronously.

6. Delivery Status Module

After emails are sent, this module generates a status report showing which emails were delivered successfully and which failed (with reasons such as "Invalid email" or "Authentication Error"). This log helps users take corrective actions or retry failed deliveries.

VI. SYSTEM ARCHITECTURE

The architecture of the proposed system is based on a client-server model that integrates both frontend and backend components for smooth interaction and reliable processing. The frontend, built using HTML, CSS, and JavaScript, provides a user-friendly interface for logging in, entering recipient details, and composing email templates. The backend, powered by Node.js and Nodemailer, handles secure authentication, data processing, and message dispatch using SMTP protocols. Sensitive credentials are handled securely via environment variables using the dotenv package, ensuring data privacy. The system architecture emphasizes modularity each function (login, template creation, preview, sending, reporting) is managed independently to allow for easy updates and maintenance. This separation concerns also makes the system scalable and adaptable for future features like analytics or cloud integration.

ISSN: 2582-7219 |www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018| International Journal of Multidisciplinary Research in



Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

1.0	-		
1.00	Cate:		
Disr Deale To	Chief Property		
[·····	1		
(Sector)	No.		
The over set of y	Repairing a		
/			
Internet.	1.00		
of Low No.			
+			
Monates	[head		
1			
Strat Sciperities	Topic participant International	Residenticing Software of F	-
			1
			Sectors.
			1000
			+
			Cogning and
			1
			Texastic secure
			1
			Send on SM11
			1
			iquest
			Nerv Matoriala
			International Academic Sciences

Fig 1 Work Flow

VII. SYSTEM IMPLEMENTATION

The following screenshots demonstrate the functioning of the Automated Email Sender system. The user logs in with secure email credentials, enters recipient details, and composes a dynamic message using placeholders. The system then personalizes and sends each email, followed by a detailed delivery status report.

Login to Send Emails		
Your Email		
Your Password	Your Password	
	Proceed	

Fig 2 Mail & Password Entry

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Fig 3 Adding Mail & Content

- Add Ride An Suban/Diarchabite	Sending smalls, please wat
te Tracischeitrig mel An Fadaest Construction	
Enall 2	
astatechnico@gmol.com	
+ Add Role	
Adio Lakoran	
te The mining and Adv. Laketon	
Compose Enail	
tosting mail	
Hill Ods is carting mail (rabat)	
Send Emails	

Fig 4 Mail Sending Process

VIII. CONCLUSION AND FUTURE WORK

The Automated Email Sender system successfully addresses the challenges of sending personalized bulk emails in a professional, efficient, and secure manner. By integrating dynamic message templating, real-time preview and validation, and SMTP-based delivery with secure credential handling, the system reduces manual effort, minimizes errors, and enhances the overall quality of communication. It is particularly beneficial for HR departments, educators, recruiters, and marketers who frequently need to reach large audiences with tailored messages. The modular design, user-friendly interface, and backend reliability ensure that even non-technical users can operate the system with ease and confidence.

Looking ahead, several enhancements can further improve the system's functionality and scalability. Future work includes integrating CSV/Excel file upload for faster recipient entry, implementing email scheduling using cron jobs, and adding a template library with reusable designs. Moreover, features like email analytics (open rate, bounce tracking), user registration with role-based access, and OAuth-based authentication for improved security can be introduced. Cloud deployment and database integration (e.g., MongoDB or Firebase) would also support multi-user collaboration and persistent data storage. These improvements will make the system even more powerful and adaptable for broader organizational use.

REFERENCES

- [1] R. Kumar and M. Patel, "An Efficient Bulk Email Sending System Using Java and SMTP Protocol," *Proc. Int. Conf. on Computer and Communication Engineering*, pp. 102–107, 2021.
- [2] S. Menon and A. Roy, "Personalized Email Generation and Delivery using Python Automation," *Int. Journal of Emerging Technologies in Engineering Research*, vol. 8, no. 4, pp. 45–50, 2020.
- [3] P. Desai and R. K. Sharma, "Design of an Automated Email System for Notification Services," *International Journal of Advanced Research in Computer Science*, vol. 13, no. 2, pp. 65–72, 2022.
- [4] R. Kumar and N. Sharma, "Personalized Bulk Email Sending System for Small Businesses," *Int. Journal of Software Engineering and Applications*, vol. 14, no. 1, pp. 59–66, 2022.
- [5] V. Sethi and P. Shah, "Comparative Study of Email APIs for Bulk Mailing," *Journal of Web Technologies*, vol. 10, no. 3, pp. 123–129, 2020.



[6] K. V. and S. Tiwari, "Evaluation of Email Automation in Small Businesses," *Journal of Digital Innovation and Technology*, vol. 5, no. 2, pp. 88–94, 2019.





INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com