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MailOps-CLI E-Mail Management Tool

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Abstract: The MailOps-CLI brings effective email management tools through a user-friendly command line system for all users to use. A Node.js application with node-imap technology permits users to control email automation and automatic search functions with ease. Users handle email better because they can enter date parameters and include files into emails through basic instructions. The MailOps-CLI system lets users dictate their emails to the interface rather than typing them. This voice-assisted email summary tool processes important message content to transmit spoken information for people who have vision problems at no human effort. Users can check email activity instantly because a reliable logging system records all system activities. By using MailOps-CLI users can easily control emails through a quick system that saves them from dealing with challenging email organization structures.

Keywords: email handling, command line tools, AI summary creation, voice-to-text conversion, security measures, ease of access, automated email actions, phishing protection, complete data encryption and email status alerts.

I. INTRODUCTION

Electronic mail commonly known as email is now the most common means of communication used in the current society and business with over billions of emails sent daily. With the number of emails on the rise, it has become quite important to sort the Email Inboxes efficaciously. Typical e-mail clients offer only merely elementary operations: creating, reading, and archiving e-mail messages, however, they are not capable of efficiently managing great amounts of incoming/outcoming e-mails. Such problems as a full mail box that delays the delivery of messages, slow performance and retrieval of email, challenges in searching for particular messages and absence of automation features bother most users. This is likely to make the task of switching between the menu, and other graphical email client interfaces take time and hence reduces productivity.

To overcome these challenges, MailOps-CLI: The Email Management Tool has been created as a simple and efficient CLI tool designed to enhance the capabilities of effectively managing email elements. This differs from typical email clients that have complex UIs through which users work with a range of applications using interface elements, with the MailOps-CLI, people use text commands to work with emails. This design accelerates the process, makes it more un entrenched, and automated where interferences are not required. In MailOps-CLI, the reader, sent, sorted, flagged, and any other basic Mail Operation needed can be possible within a few efforts, which makes it more efficient than other mail clients.

In addition, MailOps-CLI focuses on the safety of the messages sent and received as the security of email has become an essential concern in the contemporary world today. Email is still one of the most popular vectors of threats like phishing attacks, malware distribution, unauthorized access and more. To mitigate these risks, MailOps-CLI has several security measures, which are end to end encryption, filtering of spam emails, MFA and detection of phishing mails. The latest features make sure that people can share details or make conversations safe from the wrong hands of hackers.

It is also important to note that MailOps-CLI has many features of automation which help in saving the time of users by automating their repetitive email tasks. The generic business processes supported include sorting new

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mails in various folders, flagging important messages, scheduling replies to mails and alerts and notifications in real time. The latter aspects of the automating these slim down the number of efforts that require being put into it and improve its efficiency for people who are working with many emails on a daily basis.

In addition, MailOps-CLI also seeks to improve the accessibility of children with physical disabilities and anyone who faces decreased mobility relating to their job. Incorporating voice command buttons and the option of a keyboard to control the functions, makes it possible for the user with mobility problems to manage the emails fluently and without having to use the pointer. This feature corresponds to the trend of adding support that various WAAS provide to the learners who require support in their learning. To conclude, MailOps-CLI as intend is a minimalistic tool, which can serve as a reference initiator of novel and profound change of the workflow in the sphere of email communication and management. It has all the features of speed, security, automation, and it is accessible, all of which make it a viable solution to standard mail clients. In this paper, the MailOps-CLI architecture is described together with its features to indicate how it could be utilized in the contemporary digital ecosystem and its effect on the security of email communication and users' productivity is discussed.

Finally, the main findings reveal that MailOps-CLI operates as a secure flexible efficient tool which enables users to perform email tasks through an interface. Users with terminal command preferences in mail interface will find this system friendly while the provided data remains protected from public exposure. The MailOps-CLI program will continuously expand because security issues in emails will persist to increase and the program must introduce basic protective measures before email users interact with modern technology. Future MailOps-CLI versions will advance this utility to act as both a security solution and an automated package managing e-mail solutions functionality.

II. RELATED WORK

We studied existing products about email management and cybersecurity to design MailOps-CLI which would fulfill specific requirements for a command line tool.

The research team examined email system accessibility for people who are visually impaired through analysing software screen readers JAWS and NVDA that enable text-to-speech conversion. The training needs for these systems are extensive and the operations rely on human input thus making email management exceptionally time-consuming. The basic email functions available through Siri and Google Assistant include Send, Reply, Forward, and Delete but the tool lacks the list functionality with its Sort, Filter and Summarize sub-features. The requirement for cloud processing functions poses security concerns to users.

Research reviews about voice-controlled email systems evaluate these systems by starting from a limited set of operator commands. Most assistive tools lack artificial intelligence-driven summarization which forces users to listen to entire email contents. It is still a worry in that classical accessibility tools have no rigorous confirmation measures; therefore, the users face risk being compromised. As much as multi-factor authentication is common, few of the solutions are designed to cater for the visually impaired. Echo Link deals with these challenges by meeting the following essential elements of voice-based email management integrated with AI summarization and security features of high-level system. This makes it easy in switching, composing and organizing the inbox through the natural voice in order to ease the work load. As for Amazon's Echo Link, the device can be secured by face recognition and voice print authentication as well as it remains user-friendly. Its AI capabilities include summary of email contents which makes it possible for the users to go through them, and comprehend them within the shortest time possible. Incorporating the features such as accessibility, security, and intelligence makes Echo Link one of the best assistive email technologies.

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It appears that email summarization has been addressed in numerous ways using natural language processing and also using machine learning algorithms. Some traditional methods as extractive summarization focusses on extracting key emails that may contain the salient information of the messages but most of the time, they don't preserve the cohesiveness and the context. The abstractive methods based on deep learning try to come up with brief summaries while relying heavily on the massive training data availability and facing definite cohesion issues. There are other techniques that have been used for keyword extraction such as TF-IDF and LSA but are not semantically aware. Bert and T5 are the latest transformer models that inspired superior performance in the stream of email summarization while they need to be adapted for the specific usage. This is can be attributed to the fact that whereas rule-based techniques provide the much-needed control over the resultant structures, they do not have flexibility of applying on different structural configurations of emails.

Current pre-trained models like GPT-3, GPT-4 and others also have the ability to summarize as well as synthesize emails. However, it has some shortcomings; it is based on the previous knowledge of the information and can sometimes miss some important points. The previous findings also support the fact that the use of AI in the creation of summaries saves the users considerable time because less reading time is required while keeping the meaningful content intact. Thus, still there is a controversy about how lengthy a summary should be and how far it should be narrowed down to get only the relevant information and, at the same time, ensure that it remains accurate. Therefore, this paper devotes its focus on the application of ChatGPT for email summarization through its conversational prompt to enhance content while retaining meaning. To achieve this goal, the research is aimed at improving the quality of summaries created by ChatGPT through additional training of the model on a large number of e-mail conversations.

Current solutions offered by SIEM instrument are crucial in cyber protection, monitoring, analysing, and handling threats in real-time. These includes several sources of security data to provide a single point for monitoring. However, it was also found that many SIEM systems do not contain customized facilities regarding the email alerting services that are convenient for the security and communication of threats. New generation of emails are often standard and do not fit current organization standards. Here, research has been conducted on artificial intelligence automation, natural language processing on logs, and incorporating features of SOAR for improving SIEM solutions. Still, some of these issues include fatigue in alerting, false alerting as well as poor reporting. Intelligent-based SIEM email alerting systems are designed to enhance the operational effectiveness by allowing more flexible, based on a user's profile, email notifications. This work extends prior work by proposing a system that automates the creation of reports; improvement of the accuracy of the alert; and, optimization of the notification of security events towards the filing of an incident.

P. Letmathe, E. Noll, "Analysis of email management strategies and their effects on email management performance," RWTH Aachen University, 2022, doi: 10 Letmathe, P. Noll, E. E-Mail Management Strategies and Their Impact on E-Mail Management Performance: An Examination of E-mail Management Strategies and Their Performance Outcomes. The paper written by P. Letmathe and E. Noll at RWTH Aachen University examines alternative features and effectiveness factors which enhance email management while making users more efficient with this tool. The selective viewing along with tagging and fanout approaches address various issues which develop because of extensive message traffic from multiple sources according to them. Machine learning techniques combined with predictive e-mail filtering enable e-mail management while heuristics perform task distribution according to the research findings. The quantitative analysis tracks major efficiency measures of email systems through time-based records and user satisfaction scores in addition to backlog assessment results.

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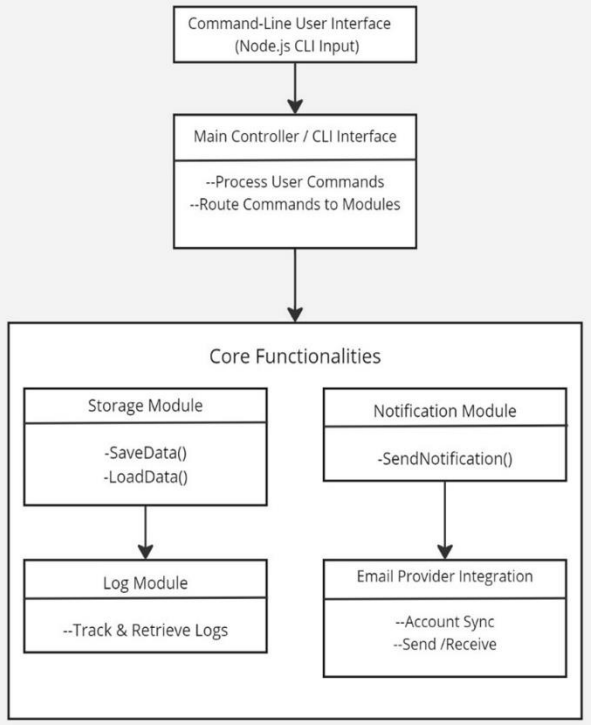
III. PROPOSED METHODOLOGY



A. System Architecture

The system architecture of MailOps-CLI includes a command-line process in which users enter commands that the operations control centre processes before forwarding it to main control features. The Storage Module is a framework that deals with local data storage and retrieval for access when Offline while the Notification Module sends notification when a new email has been availed. The Log Module tracks activity for logging purposes, while the Email Provider Integration guarantees synchronization with the email provider in order to allow for send and receive features. The presented modular structure provides optimized and concise control of emails through CLI with all components working separately for better updating and extensibility.

B. Mail Work Flow

The diagram outlines the process of handling emails with particular focus in the relationship between the sender and the receiver of the emails. This process can begin with a sender creating an email, and which is sent through Internet's Simple Mail Transfer Protocol (SMTP). SMTP link takes the sender's email client to the network so that the email gets to the mail server. The mail server has two functions; receiving and forwarding incoming mails as well as sorting out outgoing mails. Outgoing mailing sends the message to the recipient's mail server; incoming mailing stores and organizes incoming messages for pickup. On the receiver's side the email will be read using post office protocol link POP, which checks mail on the mail server. The network will aid in easy sending of emails from the server to the recipient's email application. This two-way process means that communication is assured to get through and does not permit the enhancement of the efficiency of sending and receiving e-mails.

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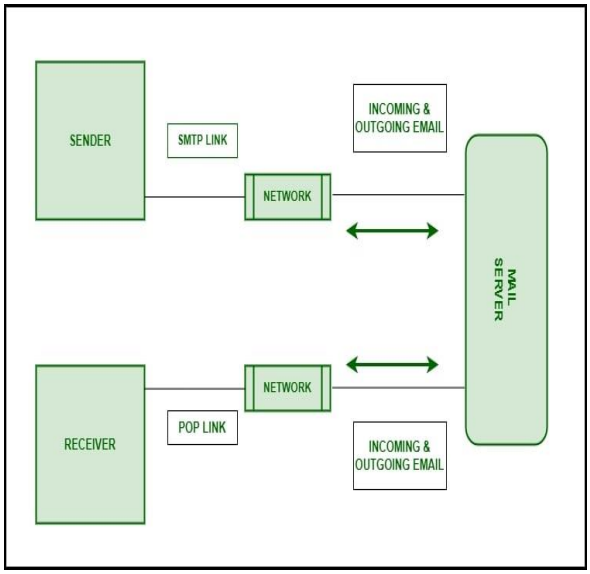


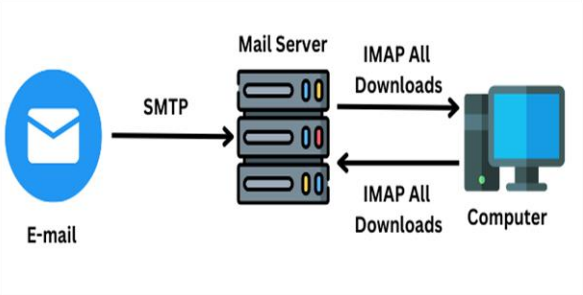
Fig (b) AES estimation

C. SMTP Protocol

The image shows two main categories of messaging; SMTP for sending messages and IMAP for receiving and managing the sent and other messages. SMTP is a protocol that offers a successful transfer of messages from the sender's client to the mail server. Once the message is typed it can check whether they are correct in format and then delivered to the recipient's mail server using internet. This will check the authenticity of the domain of the receiver, and then deliver the email to the receiver's mail server.

After the sent e-mail is delivered to a recipient's mail server, this is accompanied by IMAP protocol with the client device to run as well as access the stored e-mail messages. Different to post office protocol, which downloads e-mails and removes them. permanently from the server while making the users capable of storing the e-mails in an online manner and viewed from any device. In doing so, all the message e-mails whether sent or received can always be accessed on the preferred device.

IMAP could be most useful with users who read their mail across multiple locations because it preserves the message content and organization on the server. It also includes folders and server search that are more efficient in increasing user performance. Normatively, then, the combination of SMTP and IMAP constitutes a powerful and reliable message transfer system that will ensure message delivery and availability by synchronizing them and allowing access any time and any place. This process demonstrates how today's email protocols have become fast, intelligent and centerer on the user demands.



Fig(c) Working of SMTP & IMAP

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D. IMAP Protocol

IMAP or Internet Message Access Protocol is the protocol that allows users to read their emails without downloading it to their PCs. Unlike POP3, IMAP offers the connectivity of real time means the activities like reading, erasing or moving the emails are illustrated on all the devices at a similar time. This makes IMAP suitable for clients who need to access their mail from other locations or other machines since all the emails are real and updated but do not take space on the storage. IMAP offers foldering, management and stresses that users are able effectively use their e-mail easily with a common experience regardless of the type of platform being adopted.

IV RESULTS AND DISCUSSION

A. Efficient Email Management

The MailOps-CLI project is accomplished to deliver the simplest yet the most effective email management application that runs well on the command line. The easiest way to send, receive, and store emails with functions that work with multiple accounts and service providers. Customizable automation solutions are the big boon of this interface; which help the users in increasing the workflow. They also said that the system is very flexible and extensible for future security improvements including the filtering of spam and encryption. Finally, it can be concluded that using MailOps-CLI tool is a good opportunity to optimize work with e-mail, fast, secure and adaptable within the framework of the cybersecurity context.

B. Discussion

In general, the project, called MailOps-CLI, successfully resolves the increased demand for quick and secure email handling for those who prefer to work with command lines. Unlike traditional e-mail clients that were developed to enhance the communication experience the application offers a cleaner environment and slows down the cluttering of simple e-mail tasks such as sending, opening, and categorizing e-mail messages. This tool has one of the most important characteristics of flexibility as a key aspect for its utilization amongst MailOps community. It provides support for multiple accounts and even multiple service providers for ease of managing all one’s communication. Moreover, the usage of scripting allowed the creation of opportunities for automating various tasks, which has high adaptability to most of the users. Prospectively, the project holds a lot of potential for widening options for security features that are necessary for safe communication; thus, spam filtering and protection against phishing and other encryptions are expected to be included in the list of features. With these development, MailOps-CLI can suit any individual and even corporate uses when it comes to managing emails at work or otherwise as the flow of emails is kept secure and relevant.

V. CONCLUSION

In conclusion, MailOps-CLI offer us a command line e-mail client that fully meets the task and could be recommended to all developers, system administrators and all the people who require powerful, flexible and productive e-mail client. Disposing with the need for large. Email clients and bringing effectiveness to the tedious tasks it also proves to be very secure and user-oriented. Limitations of the tool continue; future advancement should aim at improving compatibility, efficient spam detection, and increased security approach to VAT for consolidation in the cybersecurity arena.

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Another unusual aspect of this tool is that it is designed to work with different providers of e-mail, which means that a user can manage all his/her accounts within one interface. Its organized envelope format keeps official and private E-mails separated along with a range of automated abilities cuts the efforts of doing a lot of manual work. Furthermore, it also includes more enhanced features of privacy which helps safe guard all the data from getting disclosed when it is not required. Despite the fact that the final stable version of the program has not been released, MailOps-CLI continues to be added new features and enhance the previously implemented ones, as well as the measures protecting against unauthorized access. Its continual enhancement can pave the way to an immeasurable utility in the different fields as a demanded means for the effective management of e-mail communications for the target audience in the contemporary world of threats.

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