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E-Mail AI Enhancer using Ollama

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ABSTRACT

The project focuses on a chrome extension that uses local AI models that are run by the Ollama to dock Gmail vestments. Through having the entire processing done on the stoner machine and providing detailed summaries in G-mails UI the tool, the stoner data is guaranteed to be protected. It combines pop-up interface and background processes and scripts. The app is developed with JavaScript on the frontend communication, a RESTful API, and based on core Chrome Extension factors. This arrangement is perfect when the sequestration-druggies and professionals want to learn to use their emails speedily without moving any information to cloud systems. The design is consistent with the increased need to use AI results that focus on stoner sequestration, as exhibited by the facility to customize hosts/models, the ability to select a summary style, and the impeccable Gmail comity, straining the promise of the unique AI in daily productivity processes. It is a scalable solution to ultramodern communication problems due to its armature as it can be extended with the capabilities of multilingual summarization or proposed responses with no pain.

I. INTRODUCTION

Experts across sectors are encountering growing challenges in managing inordinate dispatch flows. As digital correspondence expands, individualities frequently struggle to prize details from lengthy threaded email exchanges. Traditional results to this problem involve either reviewing emails or counting on cloud-based summary tools, both of which are time-ferocious and could risk data sequestration.

This project presents an Email Summarizer with Ollama a Chrome extension for browsers that utilizes intelligence to automatically condense Gmail threads to address this issue. Unlike cloud-based alternatives, this extension runs entirely on the user's machine by linking to a locally hosted Ollama inference server, ensuring both efficiency and privacy. When using AI, there is no requirement to transmit sensitive data over the Internet.

The foundation of the extensions framework lies in the Chrome extension ecosystem. Through a pop-up user interface, users can configure settings, including the server host, port, API key, model name, and summary format. This interface employs a content script to access the content of Gmail threads and a background script to communicate with the Ollama API to generate responses. After processing, the generated summary is seamlessly added at the top of the email thread, enhancing clarity and conserving time. This application promotes privacycentered efficiency by integrating AI processing with seamless Gmail connectivity. Free from dependence on services or third-party data handling, users can easily grasp the content of long emails. The result is a secure and user-manages summarization tool designed for individuals who manage extensive communication.

System	Description	Issues
Cloud-based Summarizers	Use online servers (e.g., ChatGPT, Bard) to generate summaries.	Privacy risks, internet required, API rate limits.
Manual reading	Users read through entire email threads manually .	Time-Consuming, error-prone, mentally tiring.
Paid assistants(e.g., Gemini, Copilot)	Integrated into tools like Gmail or Outlook for smart replies & insights	Expensive, cloud -only limited customization.
Chrome extensions with API's	Browser plugins using third-party API's for summarizing emails.	Depends on external services, slow, privacy not guaranteed.
Built-in Gmail features	Gmail's 'Smart Reply' & "Nudges" features.	Very limited Summarization, on control over output.
Enterprise email tools	Used by Organizations for analytics and insights.	Require setup, licences, not suitable for individuals

II. EXISTING SYSTEM

III. PROPOSED METHODOLOGY

The proposed system aims to overcome the limitations of existing email summarization methods by incorporating intelligent privacy-focused and locally run AI techniques.

A Chrome Extension Component

The system was designed to work with Gmail using a Chrome extension. The content script extracts the text displayed in email conversations. This information was then forwarded by a background script to the hosted Ollama API for summarization. Through the pop-up interface users can set the host address, port, API key and model name (e.g., DeepSeek or Phi-2). Choose a summary style (brief or comprehensive).

Local AI Summarization via Ollama The extension uses locally installed language models through the Ollama inference engine to generate summaries. Models like DeepSeek process the extracted Gmail content directly on the user's device, ensuring complete privacy. Since all summarization happens offline, none of the email data is ever sent over the internet.

Real-time Summary Injection

The summary shows up in a clean box right above the email thread in Gmail. As soon as Gmail loads, the extension creates the summary automatically no extra steps from the user.

IV. LITERATURE SURVEY

Ref. No.	Author(s) / Tool	Year	Area	Description / Key Findings
[1]	Rush, Chopra, Weston	2015	Machine Learning	Proposed neural attention-based abstractive summarization model for sentences.
[2]	Liu and Lapata	2019	Machine Learning	Introduced BERT- based framework (BERTSUM) for extractive and abstractive summarization.
[3]	Radev et al.	2021	Machine Learning	Provided insights into practical and user- focused summarization systems in NLP.
[4]	Ollama	2023	Local AI Models	Enables local inference of LLMs ensuring privacy.
[5]	Flowrite	2021	Browser Extensions	AI-powered writing and summarization tool relying on cloud-based APIs.
[6]	Microsoft Copilot	2023	Web-based AI Tools	Cloud-based AI assistant integrated into productivity tools.
[7]	Google Gemini	2024	Web-based AI Tools	Advanced multimodal AI system dependent on cloud infrastructure.

V. CHALLENGES

The development of the email summarizer involved several challenges, particularly in integrating the Chrome extension with Gmail's dynamic and frequently changing DOM structure, which affected the consistent display of generated summaries across different systems.

Establishing reliable communication between the extension and the local Ollama server required proper handling of API requests and configuration settings. Additionally, variations in system environments, browser versions, and screen layouts led to inconsistencies in performance and behavior, making it difficult to ensure uniform functionality across different devices.

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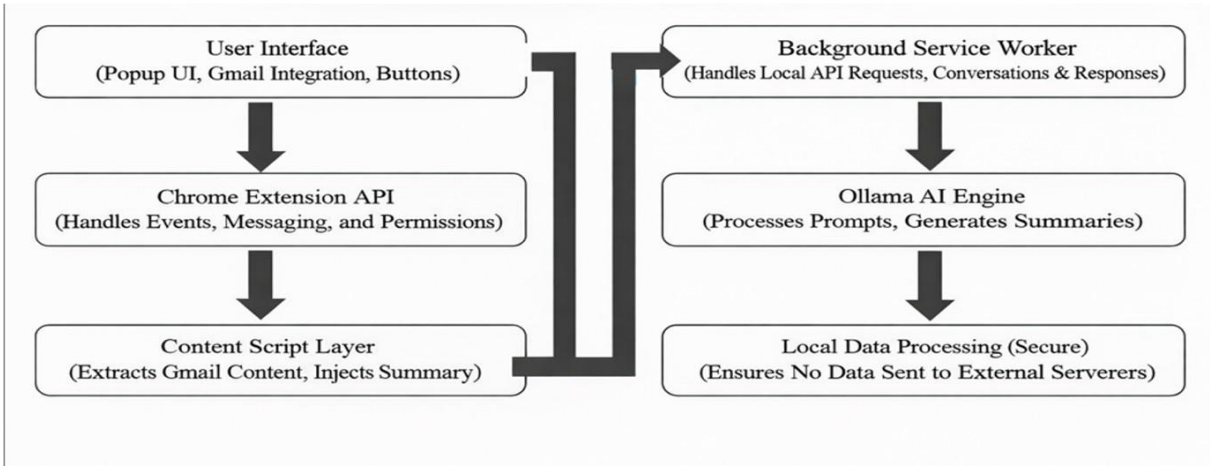
VI. RESEARCH GAPS

The current system highlights several research gaps, including limitations in the accuracy and contextual understanding of summaries generated by the local AI model. There is also a lack of standardized evaluation metrics to assess the quality of the generated summaries. Furthermore, the solution is limited to a local setup and does not support scalability or cloud-based deployment. The system also offers limited customization options for users and does not incorporate feedback mechanisms to improve performance over time, indicating opportunities for future enhancements in adaptability and user experience.

V. SYSTEM ARCHITECTURE



VI. CODE SNIPPETS

1. popup.js

```
document.addEventListener('DOMContentLoaded', () => {
  const saveButton = document.getElementById('save-settings');
  saveButton.addEventListener('click', async () => {
    const settings = {
      host: document.getElementById('host').value,
      port: document.getElementById('port').value,
      model: document.getElementById('model-select').value,
      format: document.getElementById('summary-format').value
    };
    await chrome.storage.local.set({ ollamaSettings: settings });
    alert('Settings saved successfully!');
  });
});
```

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2. gmail-content.js

```
function getEmailThreadContent() {
  const containers = document.querySelectorAll('.h7, .nH, .AO');
  let content = "";
  containers.forEach(container => {
    const text = container.innerText.trim();
    if (text) content += text + '\n\n';
  });
  return content;
}
```

3. background.js

```
chrome.runtime.onMessage.addListener((request, sender, sendResponse) => {
  if (request.type === "generate") {
    fetch(`http://${request.data.host}:${request.data.port}/api/generate`, {
      method: "POST",
      headers: { 'Content-Type': 'application/json' },
      body: JSON.stringify({
        model: request.data.model,
        prompt: request.data.prompt,
        format: request.data.format || "concise"
      })
    })
    .then(response => response.json())
    .then(data => sendResponse(data))
    .catch(error => sendResponse({ error: "Generation failed" }));
    return true;
  }
});
```

4. manifest.json

```
{
  "manifest_version": 3,
  "name": "Email Summarizer with Ollama",
  "version": "1.0",
  "permissions": ["activeTab", "storage"],
  "host_permissions": ["http://localhost:11434/*"],
  "background": {
    "service_worker": "scripts/background.js"
  },
  "action": {
    "default_popup": "popup.html"
  },
  "content_scripts": [
    {
      "matches": ["https://mail.google.com/*"],
      "js": ["scripts/gmail-content.js"],
      "css": ["styles/gmail-content.css"]
    }
  ]
}
```

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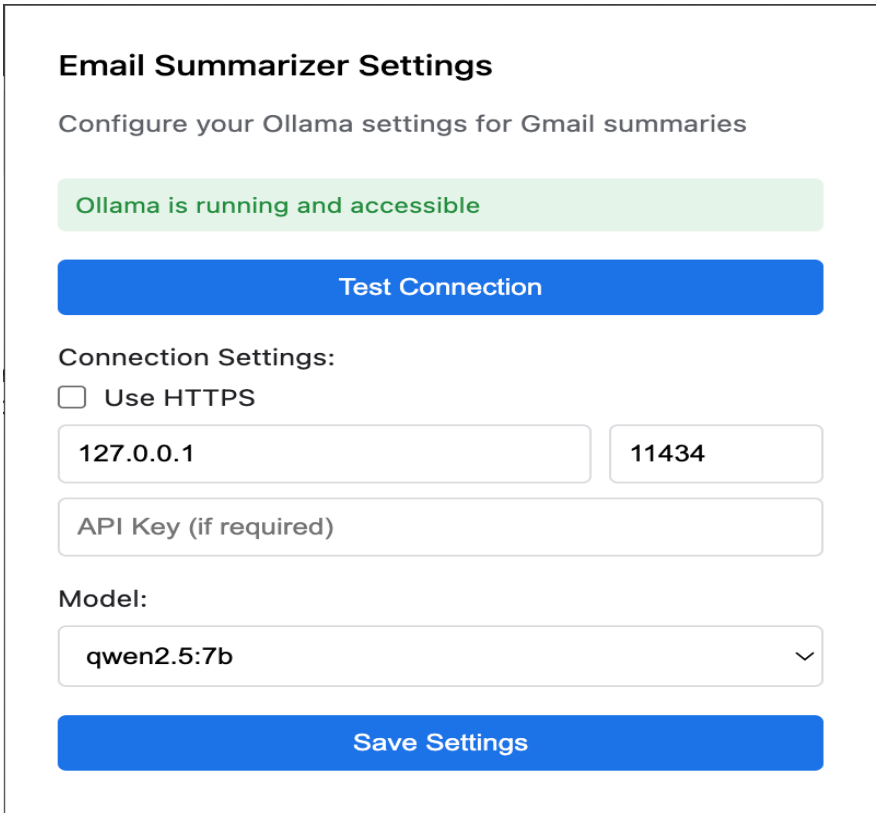
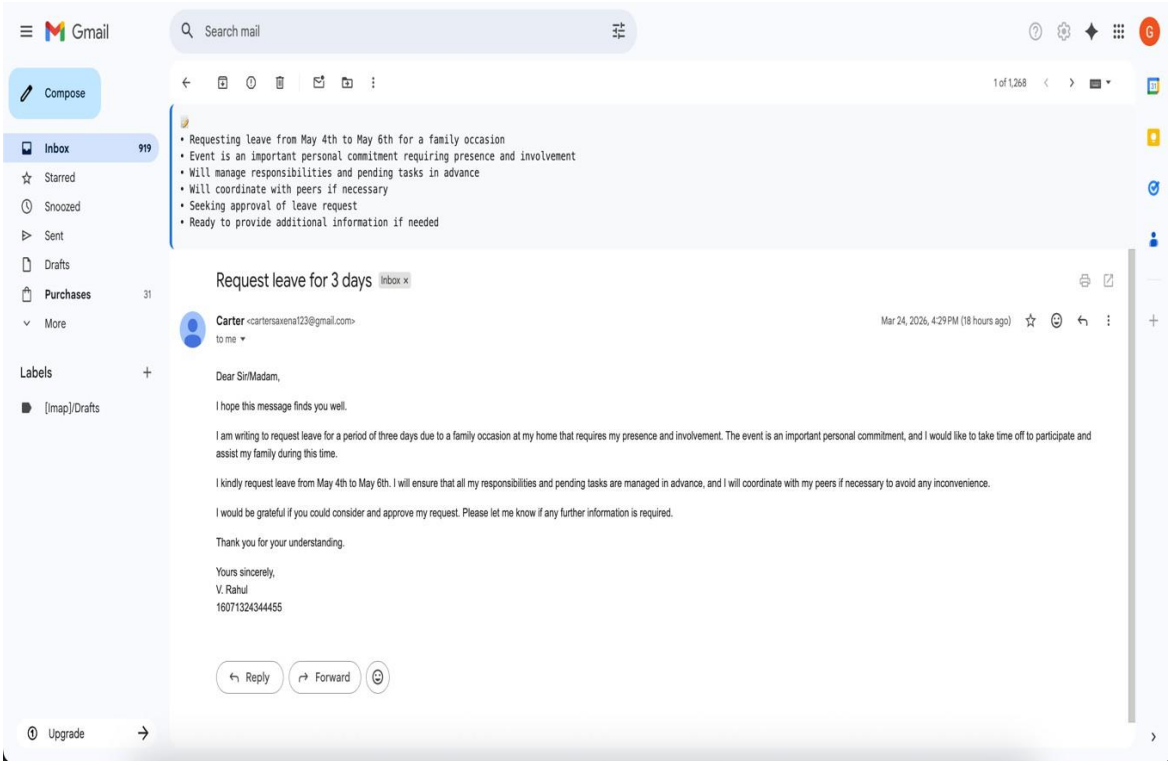
VII. RESULT





VII. CONCLUSION

The Email Enhancer, exercising Ollama exemplifies how contemporary AI capabilities can be combined with a sequestration-frame to enhance effictiveness in email-dependent tasks. This extension ensures that users receive brief summaries through local AI model processing while upholding data protection and complying with regulations. In diligence where sequestration and confidentiality are critical, similar as healthcare, finance and legal fields this simply original structure is vital. Pilot trials yielded issues showing notable reductions in time strong user approval and a strong correlation between the generated summaries and those made by humans. The tools complication and ease of use are apparent through its Gmail integration, intuitive interface and dependable operation, across multiple platforms. Likewise, its streamlined codebase and modular design make it well-suited for platform operation and ongoing advancements. This action also demonstrates the potential for on-device AI application within communication and productivity operations that recognize user privacy.

This approach aligns with the movement towards decentralized intelligence, where the calculation and decision processes occur closer to the user device, improving performance while preserving privacy.

VII. REFERENCES

“In Outlook, utilize Copilot to generate a summary of an email conversation." Microsoft Copilot, Support Article, Microsoft. Microsoft Support

• Frequently asked questions regarding Copilot, in Outlook. " Microsoft Support. Microsoft Support

"Release Notes | Gemini API – Google AI for Developers. " June 17, 2025, Google Gemini. Google Developers

• Google Workspace blog: "Empowering Businesses with AI"

• Zhang, Y., et al. (2024). On-Device Large Language Models: A Survey of Methods and Applications. arXiv:2401. 08739.

• Hu, X., et al. (2023). On Edge Devices, Efficient LLM Inference. IEEE Edge Computing Journal.

• LLM Security Review (2024). arXiv:2402. 06320 is a study on privacy and security concerns in large language models.