

Smart Relay

Personal AI Communication Assistant

Methodology

1. Smart Email Management (Gmail)

- **Email Categorization:** Used **Gmail API (Google OAuth 2.0 authentication)** to fetch emails. Labeled emails using **NLP techniques** and trained a **Random Forest model**, then used the **saved model** for categorization.
- **Summarization:** Employed **T5 Transformer model** (via **Hugging Face's pipeline API**) for summarizing.
- **Quick Responses:** Fine-tuned **DialoGPT** using a **large email response dataset** for automated replies.
- **Reminders:** Filtered important unread emails using **Gmail query**: " **is:unread is:important -from:me -in:chats** " and used **Gmail API's send()** method to send reminders.

2. Team Communication Optimization (Slack)

- **Message Processing:** Integrated **Slack API** for message retrieval and **Slack Bot Token** for auth.
- **Summarization & Digests:** Used **facebook/bart-large-cnn** for summarizing key discussions. The **BART model** extracts key topics, while **keyword-based processing** identifies action items.
- **Task Extraction:** Applied **spaCy NLP** to detect tasks based on predefined **action keywords** and **urgency indicators**.
- **Smart Search:** Converted messages into **vector embeddings** using a **Transformer model** and indexed them with **FAISS** for **fast similarity search**.

3. WhatsApp Automation

- **Routine Responses:** Fine-tuned **DialoGPT** using **WhatsApp chat history (JSON dataset)** for automated responses.
- **Chat Summarization:** Applied a **pre-trained BART model** to summarize long conversations.
- **Follow-ups & Reminders:** Used **Chrome WebDriver** to search contacts and send messages via **WhatsApp Web**. Implemented **Python Scheduler** to run reminders in a **separate thread** for scheduled message sending.

Findings & Recommendations

- **Email Categorization** - Started with **clustering-based labeling**, then improved accuracy using **NLP tools + keyword-based approach** with a **Random Forest model**.
- **Slack Task Extraction** - Combined **keyword-based + NLP techniques** for better task identification.
- **WhatsApp Automation** - Initially explored **API-based solutions**, then switched to **Selenium-based automation**, handling **scrolling** and **"Read more"** expansion.

Future Enhancements

- Improve **email classification** with **BERT/RoBERTa** models.
- Enhance **Slack automation** with **custom NLP pipelines & sentiment analysis**.
- Explore the **official WhatsApp API** for a **scalable** automation solution.