

Gen AI-Based Email Classification and OCR

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Gen AI Orchestrator for Email and Document Triage/Routing

1. Introduction

The **Gen AI Orchestrator** is an intelligent automation system designed to analyse, classify, and route emails and documents based on their content, priority. This document provides a comprehensive walkthrough of the application process, covering its functionality, setup, and usage.

2. Application Overview

The system utilizes **Generative AI** and **Natural Language Processing (NLP)** to:

- Classify incoming emails which contains documents
- Extract key information and metadata based on the user configuration

In futuristic scope of the application,

- Route them to the appropriate department/person
- Provide response suggestions for automated or semi-automated handling
- Integrate with existing email and document management systems

3. Features

- **Automated Classification:** Uses AI to categorize documents and emails into predefined categories of configured request types and Sub types.
- **Entity Extraction:** Extracts critical information such as sender details, dates, priority levels, and keywords based on security rules which is configurable by admin.
- **Analytics Dashboard:** Provides insights into processed emails and duplicate emails segregation details

This could be possible to integrate,

- **Integration:** Works seamlessly with platforms like Gmail, Outlook, SharePoint, and CRMs.

4. Application Process Walkthrough

Step 1: System Setup & Configuration

1. Clone the repository

```
git clone https://github.com/ewfx/gaied-ai-beginners.git
```

2. Go to this path

```
"..\gaied-ai-beginners\code\src\ui"
```

then follow the below step3.

3. Install dependencies

```
>> npm install concurrently --save-dev // only first time
```

```
>> npm run build:first // only first time
```

4. Go to this path `"..\gaied-ai-beginners\code\src\api"`

```
>> uvicorn app:app --reload (This will initiate fast api )
```

5. Open this URL -> [FastAPI - Swagger UI](#)

6. Run the project with this path `"..\gaied-ai-beginners\code\src\ui"`

```
>> npm start
```

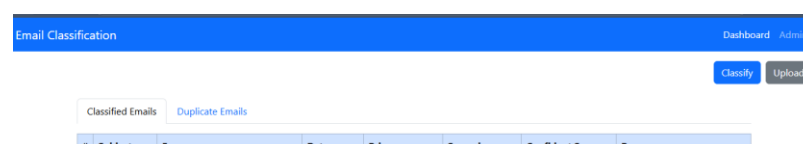
7. Open this folder path ->

```
"..\gaied-ai-beginners\code\src\mail_dropbox\unread"
```

Place some .eml files for process.

8. Now open the application and click classify

9. Now we can see the data in the dashboard under classified emails.

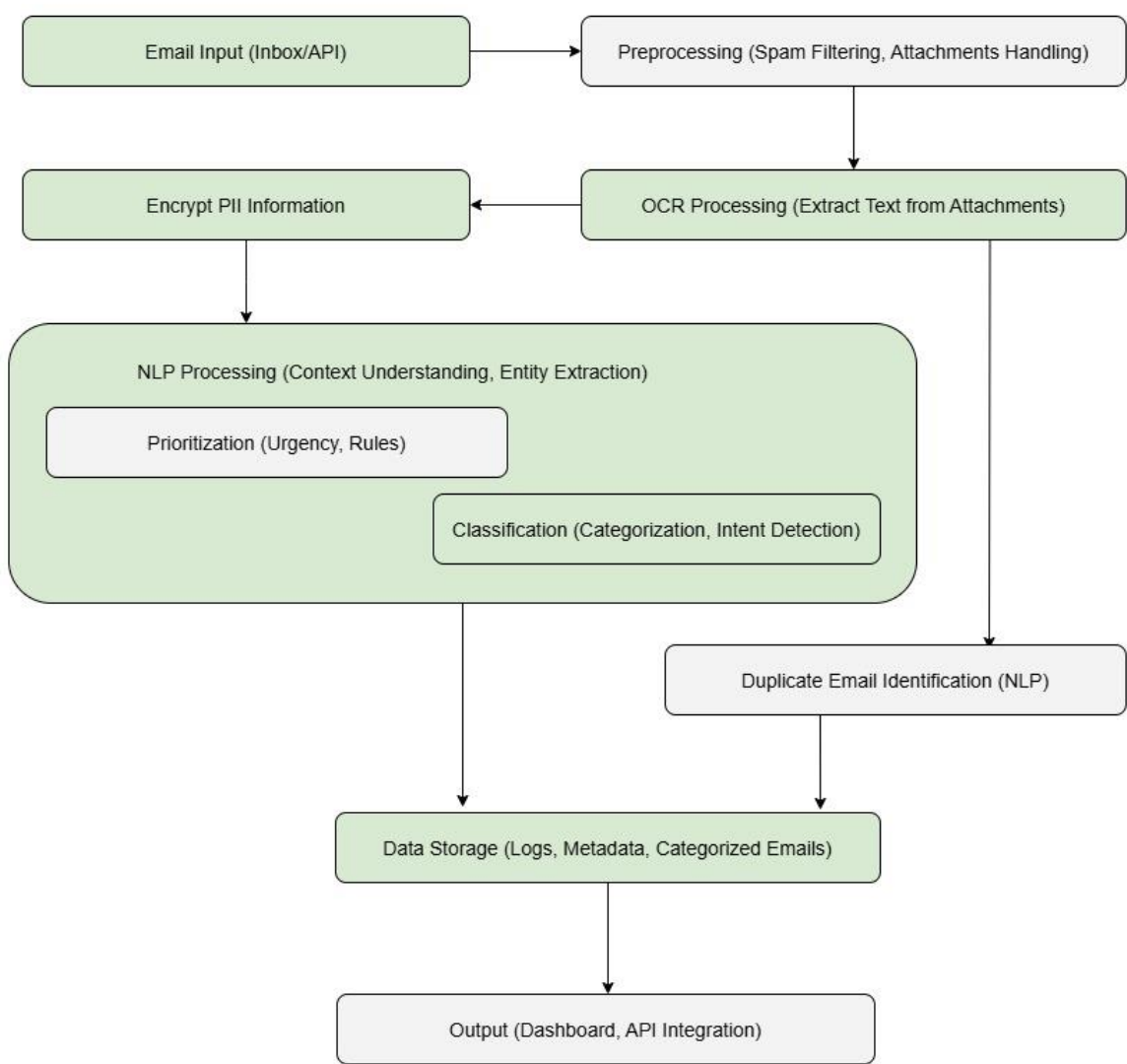


Email Classification							
Dashboard Admin							
Classify Upload							
Classified Emails Duplicate Emails							
#	Subject	From	Date	Primary	Secondary	Confident Score	Reason

Step 2: User Interaction & Response

1. **Dashboard View:** Users can have option to click Classify action to start process the emails from a folder which consists of list of .eml files from the folder can be select by user.
2. **Review & Validation:** Users can review AI-generated classifications and modify as needed from an Admin screen for Request types and Prioritization.

5. Architecture Diagram



6. User Interaction Screen flow

Screen 1: Admin – Request Type, Prioritization, Security Configuration pages

Email ClassificationDashboard Admin

Request Types

+ Add



























#	Request Type	Sub Request Types	Action
1	Loan Application	Personal Loan Application, Business Loan Application, Home Loan Application, Auto Loan Application, Student Loan Application	 
2	Loan Modification	Interest Rate Change, Loan Term Extension, Repayment Schedule Adjustment, Refinancing Request	 
3	Loan Disbursement	Disbursement of Personal Loan, Disbursement of Business Loan, Disbursement of Mortgage Loan, Disbursement of Auto Loan	 
4	Loan Repayment	Full Repayment, Partial Repayment, Early Repayment Request, Regular Installment Payment	 
5	Loan Closure	Loan Paid Off, Loan Settlement, Account Closure Request	 
6	Loan Renewal	Personal Loan Renewal, Business Loan Renewal, Mortgage Loan Renewal	 
7	Loan Status Inquiry	Loan Approval Status, Loan Repayment Status, Loan Disbursement Status, Loan Remaining Balance	 
8	Adjustment	N/A	 
9	AU Transfer	Transfer of Loan to AU Account, AU Loan Transfer Request	 
10	Closing Notice	Loan Account Closing Notice, Pre-Closing Loan Notice, Final Loan Settlement Notice, Reallocation Fees, Amendment Fees, Reallocation Principal	 
11	Commitment Change	Change in Loan Commitment, Amendment of Loan Commitment Terms, Cashless Roll, Decrease, Increase	 
12	Fee Payment	Loan Processing Fee Payment, Late Payment Fee Payment, Prepayment Fee Payment, Service Fee Payment, Ongoing Fee Payment, Letter of Credit Fee Payment	 
13	Money Movement-Inbound	Inbound Loan Payment, Inbound Transfer from Another Bank, Inbound Payment from Borrower, Principal, Interest, Principal+Interest,	 

Figure 1 : Request Type Config

Email ClassificationDashboard Admin

Request Types

Prioritization List

+ Add

















#	Request Type	Description	Action
1	Money Movement-Inbound	refers to requests where the receiver is expected to fund or transfer money into the sender's account (e.g., "PLEASE FUND YOUR SHARE").	 
2	Money Movement-Outbound	refers to requests where the sender is expected to transfer money out to the receiver (e.g., "Please disburse the loan amount").	 
3	Money Movement-Inbound,Money Movement-Outbound	Should take precedence over all other request types if the content includes funding requests.	 
4	Loan Disbursement,Loan Repayment	Should take precedence over 'Adjustment', 'Fee Payment', and other non-financial requests.	 
5	Adjustment	Should take precedence over 'Loan Status Inquiry', 'Loan Renewal', and other low-priority requests.	 
6	Fee Payment	Should take precedence over 'Loan Servicing Reports' and other informational requests.	 
7	Fraud Investigation	Should take precedence over all non-financial requests due to its critical nature.	 
8	Loan Servicing Reports	Should only be classified if no higher-priority requests are present.	 

Figure 2 : Prioritization Config

Email ClassificationDashboard Admin

Request Types

Prioritization List

Security Rules

Rules (comma-separated)
BORROWER, DEAL NAME, Reference, ABA #, Account Name, Ref, Telephone #, Fax #

Update Rule

Figure 3 : Security Rules Config

Screen 2: Dashboard

Classified Email

Email Classification

DashboardAdmin

ClassifyUpload

Classified EmailsDuplicate Emails

#	Subject	From	Date	Primary	Secondary	Confident Score	Reason
1	ABC Bank share adjustment	Kannan Krishnan <kannaa.krishnaa@gmail.com>	03/24/2025, 1:33 PM	Type: Money Movement-Inbound SubType: Inbound Payment from Borrower	Type: Adjustment SubType:	PrimaryAsk: 95% SecondaryAsk: 85%	The primary ask is classified as Money Movement-Inbound due to the explicit request for funding a share amount of \$24,714.36. This request dominates the content due to the prioritization rules regarding money movements. The adjustment in shares is also mentioned but is considered a secondary aspect.
2	Fwd: DocScanner 23 Mar 2025 3-15 pm.pdf	Kannan Krishnan <kannaa.krishnaa@gmail.com>	03/23/2025, 6:12 PM	Type: Loan Repayment SubType: Regular	Type: Loan Status Inquiry SubType: Loan Repayment	PrimaryAsk: 95% SecondaryAsk: 80%	The content primarily revolves around a loan repayment scenario with specific numbers and dates.

Figure 4 : Classified Emails

Duplicate Emails with reasons

Email Classification

DashboardAdmin

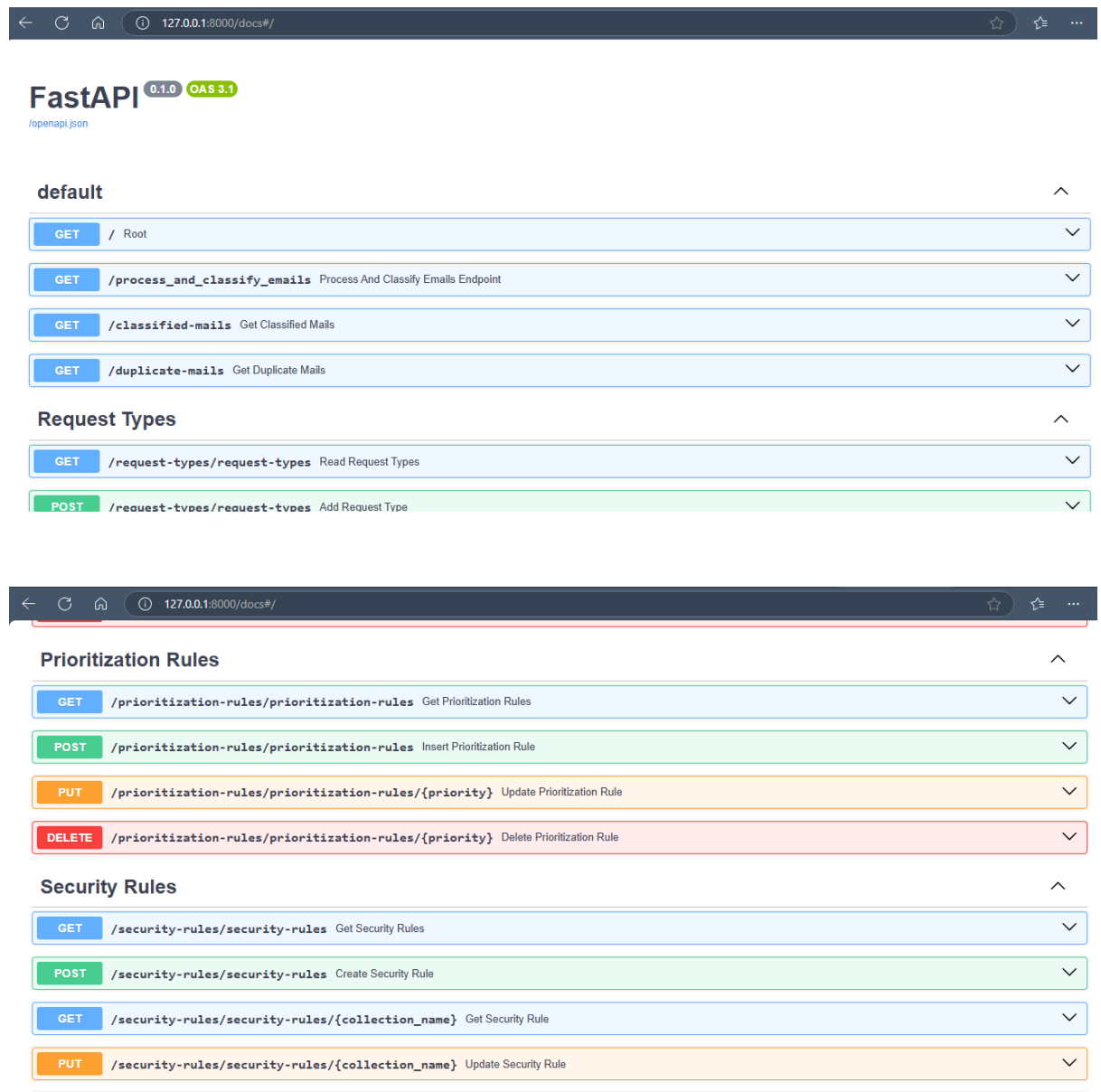
ClassifyUpload

Classified EmailsDuplicate Emails

#	Subject	From	Date	Reason
1	Re: ABC Bank share adjustment	Kannan Krishnan <kannaa.krishnaa@gmail.com>	03/25/2025, 10:29 AM	Duplicate based on references. Might be follow-up mail for subject [ABC Bank share adjustment].
2	ABC Bank share adjustment	Kannan Krishnan <kannaa.krishnaa@gmail.com>	03/24/2025, 1:33 PM	Duplicate based on Message-ID.
3	Fwd: DocScanner 23 Mar 2025 3-15 pm.pdf	Kannan Krishnan <kannaa.krishnaa@gmail.com>	03/23/2025, 6:12 PM	Duplicate based on Message-ID.
4	Inquiry About Loan Application Status	Kannan Krishnan <kannaa.krishnaa@gmail.com>	03/23/2025, 10:26 AM	Duplicate based on threading information.

Figure 5 : Duplicate emails with reasons

Screen 3: Rest Api Swagger page which is used to expose email contents and its attachments data



7. Use Cases

- **Customer Support:** Prioritizing and routing customer queries efficiently.
- **Legal & Compliance:** Sorting and forwarding regulatory documents to legal teams.
- **Sales & Marketing:** Categorizing and routing leads to the appropriate sales representatives.
- **HR & Recruitment:** Automating job application triage and routing resumes.

8. Conclusion

The **Gen AI Orchestrator for Email and Document Triage/Routing** significantly enhances efficiency by classification. By following this walkthrough, users can set up and optimize the system to meet their operational needs effectively.