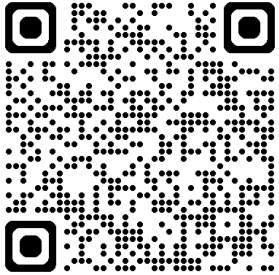


Local RAG Outlook Assistant

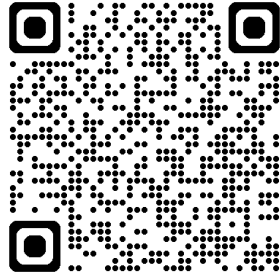
Connect With Us

Cameron Rohn

LinkedIn



GitHub



Email: cameron@cameronrohn.com

Jackson Arnold

GitHub



LinkedIn



Email: jacksonarnold96@gmail.com

Introductions

Cameron Rohn

Journey So Far...

- On prem for personal data
- NVIDIA ChatRTX
- Python/Langchain
- Data Pipelines
- LangGraph
- GraphDB

Jackson Arnold

- Developer
- Presented LangServe + Next.js demo app

Use Cases – Email

- Summarization
 - Daily, weekly, broad (all), specific (folders, people, etc.)
- Categorization and Sorting
- Task/Email Automation
 - Auto file to folder and summarize topic
- Retrieval/Search/ChatQA
- Insights to improve productivity
 - Caught things I had missed while reviewing inbox directly
 - Improves ability to implement productivity methodologies

Use Cases – Going Deeper

- Calendars/Meetings
- Contacts/People Context DB
- Create relationships between disparate data

- Data Pipelines
- Evaluation Methods
- Observability Methods

LangChain Components

Neo4jGraph <i>Purpose</i> : Connects to and interacts with a Neo4j graph database. <i>Used in</i> : GUI - GraphQA.py.	GraphCypherQAChain <i>Purpose</i> : Combines a language model with a Neo4j graph to answer questions based on the graph data. <i>Used in</i> : GUI - GraphQA.py.	ChatOllama <i>Purpose</i> : Integrates with the Ollama API to utilize various large language models for chat-based interactions. <i>Used in</i> : GUI - GraphQA.py, GUI - RETRIEVER.py, Categorize.py.	ChatOpenAI <i>Purpose</i> : Integrates with OpenAI's chat models for natural language processing tasks. <i>Used in</i> : GUI - GraphQA.py.	ChatPromptTemplate <i>Purpose</i> : Creates structured prompts for chat-based language models. <i>Used in</i> : GUI - RETRIEVER.py.	HumanMessage <i>Purpose</i> : Represents a message from a human in a conversation with an AI model. <i>Used in</i> : Categorize.py.
ChatGroq <i>Purpose</i> : Integrates with Groq's chat models for natural language processing tasks. <i>Used in</i> : GUI - GraphQA.py.	OllamaEmbeddings <i>Purpose</i> : Generates embeddings using Ollama's embedding models. <i>Used in</i> : GUI - RETRIEVER.py, Categorize.py.	Chroma <i>Purpose</i> : Interacts with the Chroma vector database for efficient similarity search and retrieval. <i>Used in</i> : GUI - RETRIEVER.py.	MultiQueryRetriever <i>Purpose</i> : Enhances retrieval by generating multiple queries from a single input query, improving the chances of finding relevant information.	StrOutputParser <i>Purpose</i> : Parses the output of language models into string format. <i>Used in</i> : GUI - RETRIEVER.py.	

Is Email Different Than Other Data Types?

- Messy text, links, images, symbols, emojis, date/times
- Attachments, calendars, contacts, tasks
- Duplicate text in reply chains
- Brief, often time lacking context
- Long threads maxing context windows
- Varying sender/recipient intent (cc, fwd to new chain,etc.)
- High volume

Project Challenges

- Highly iterative processing, requires modularization
 - Implemented documents database for fast differential sync
- Long run times, difficult to test
- Demo datasets – Enron email dataset
- Prompt engineering
- Observability/Evaluation
 - Built tools to assist

Models and Tools

- Running local models using Ollama
- Models:
 - Llama 3.2:8B (LLM)
 - Nomic-Embed-Text (Embeddings)
 - Configured to evaluate multiple models
- ChromaDB
- MongoDB
- Neo4J

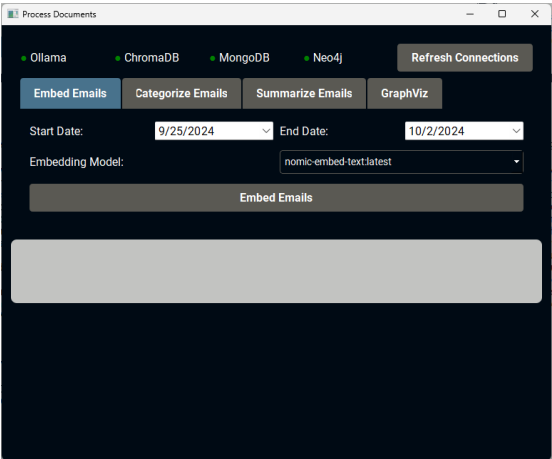
Why Local LLMs?

- Security and Privacy
- Compliance and Governance
- Limited connectivity (edge case)

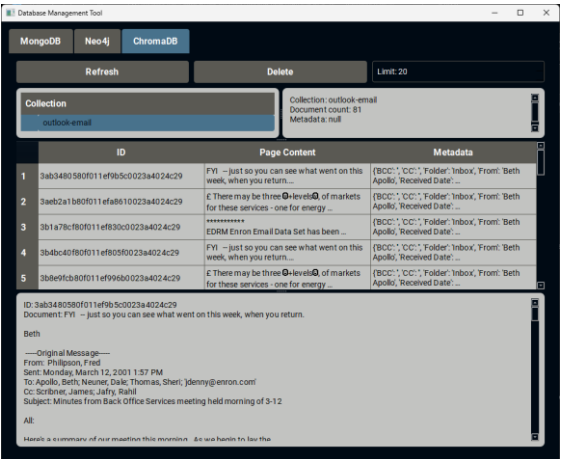
Like, no internet local?

Demo

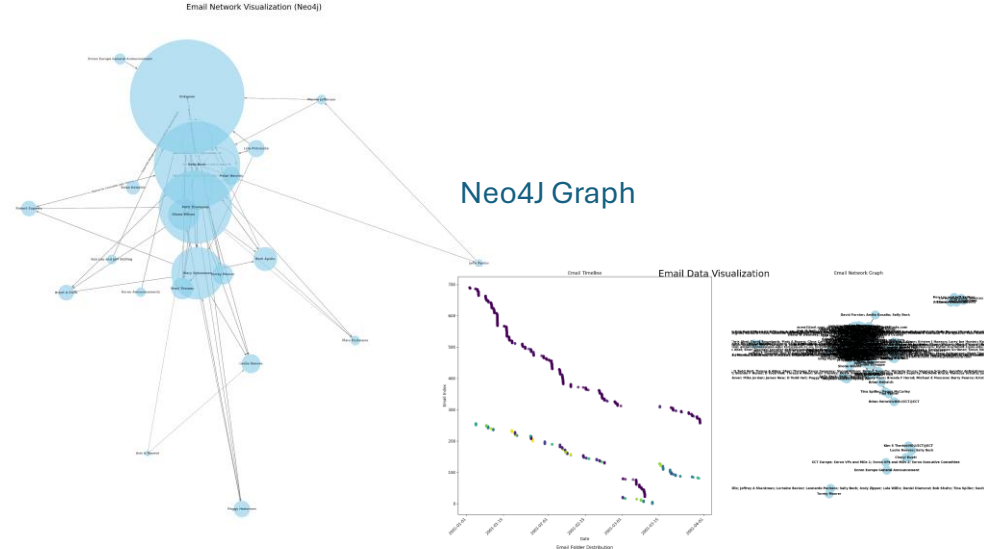
Data Embedding



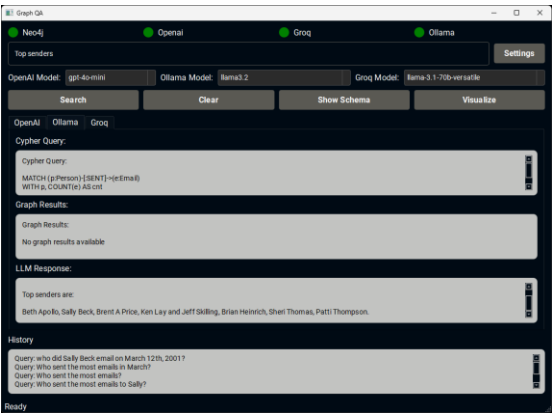
Database Management



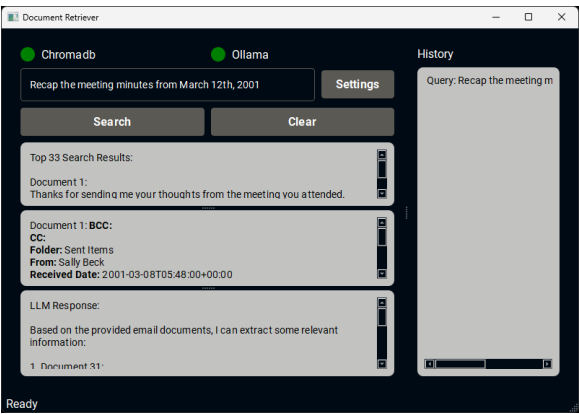
Database Visualization



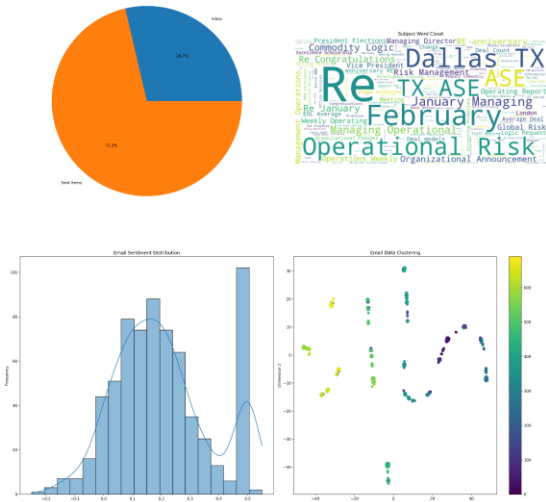
GraphQA



Retrieval/ChromaQA



ChromaDB

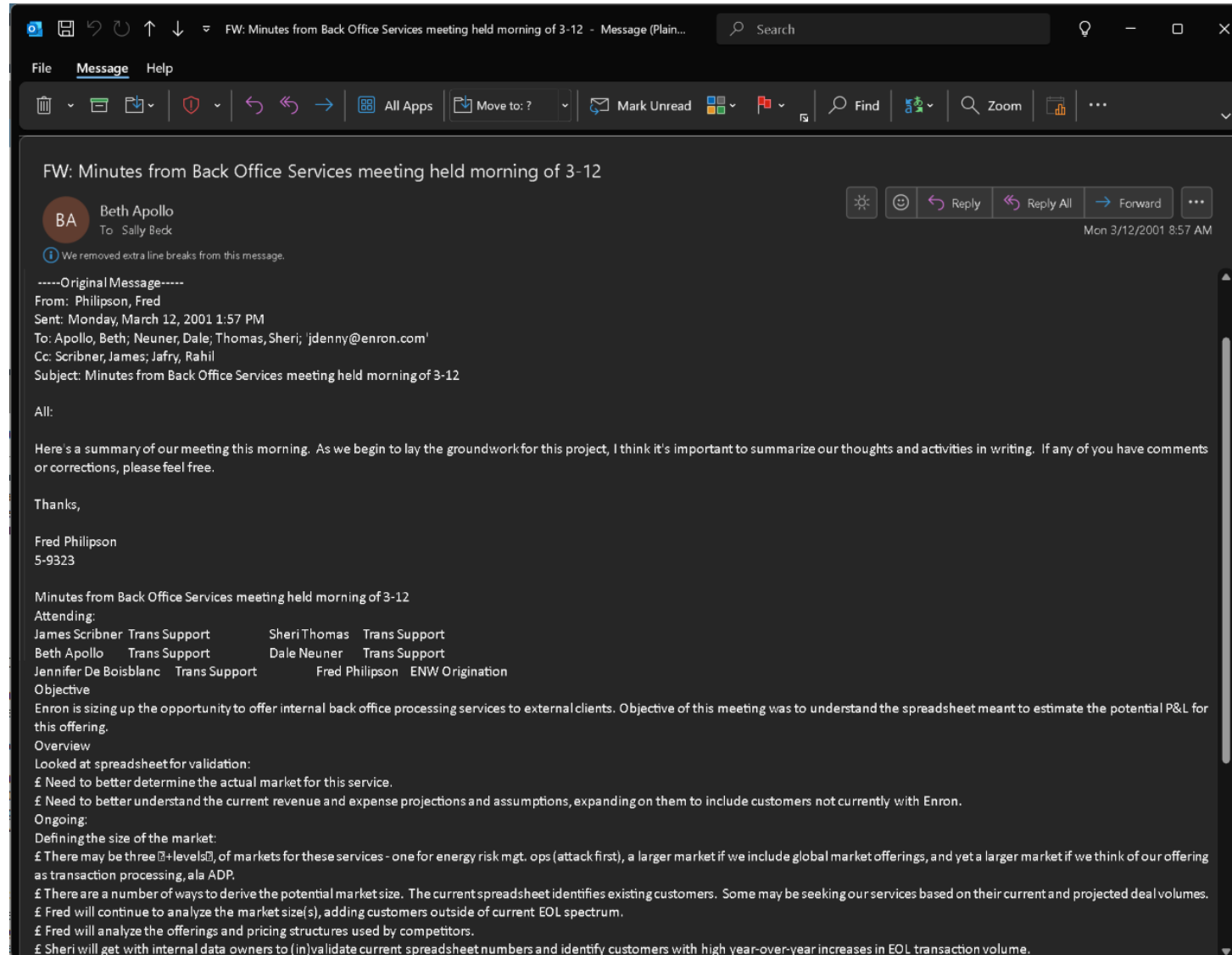


New Knowledge/Skills

- Code collaboration using GitHub and Jupyter
- Embedding LLM generated doc metadata
- Working with Outlook email data
- Structuring output using schemas
- MongoDB – Job Tracking
- Neo4j – Graph Database

Examples

Example 1: Original Emails



Example 1: MongoDB Structure

ID: 66fd97af44212113c69d3ce5

Job ID: 0000000001

Content:

```
Metadata: {
```

```
"entry_id": "00000000E07E48D42CA1744D97141ED6DC62088607000EDCB8D372C9FF42AB26B26380FDCE5200000000010C00000EDCB8D372C9FF42AB26B26380FDCE5200008346B80F0000",
```

"BCC": III,

"Body": "FYI --just so you can see what went on this week, when you return.\r\n\r\nBeth\r\n\r\n---Original Message---\r\nFrom: Philipson, Fred \r\nSent: Monday, March 12, 2001 1:57 PM\r\nTo: Apollo, Beth; Neuner, Dale; Thomas, Sheri; jdenny@enron.com\r\nCc: Scribner, James; Jafry, Rahil\r\nSubject: Minutes from Back Office Services meeting held morning of 3-12\r\n\r\nAll:\r\n\r\nHere's a summary of our meeting this morning. As we begin to lay the\r\n\r\n groundwork for this project, I think it's important to summarize our thoughts \r\n\r\nand activities in writing. If any of you have comments or corrections, \r\n\r\nplease feel free. \r\n\r\nThanks,\r\n\r\nFred Philipson\r\n\r\n5-9323\r\n\r\nMinutes from Back Office Services meeting held morning of 3-12\r\n\r\nAttending:\r\n\r\nJames Scribner\tTrans Support\t\tSheri Thomas\tTrans Support\r\n\r\nBeth Apollo\tTrans Support\t\tDale Neuner\tTrans Support\r\n\r\nJennifer De Boisblanc\tTrans Support\t\tFred Philipson\tENW Origination\r\n\r\nObjective:\r\n\r\nEnron is sizing up the opportunity to offer internal back office processing \r\n\r\nservices to external clients. Objective of this meeting was to understand the \r\n\r\nspreadsheet meant to estimate the potential P&L for this offering. \r\n\r\nOverview\r\n\r\nLooked at spreadsheet for validation:\r\n\r\n\u00a3 Need to better determine the actual market for this service.\r\n\r\n\u00a3 Need to better understand the current revenue and expense projections and \r\n\r\nassumptions, expanding on them to include customers not currently with Enron.\r\n\r\nOngoing:\r\n\r\nDefining the size of the market:\r\n\r\n\u00a3 There may be three \u00a3 levels\u00a3, of markets for these services - one for energy \r\n\r\nrisk mgt. ops (attack first), a larger market if we include global market \r\n\r\nofferings, and yet a larger market if we think of our offering as transaction \r\n\r\nprocessing, ala ADP.\r\n\r\n\u00a3 There are a number of ways to derive the potential market size. The \r\n\r\ncurrent spreadsheet identifies existing customers. Some may be seeking our \r\n\r\nservices based on their current and projected deal volumes. \r\n\r\n\u00a3 Fred will continue to analyze the market size(s), adding customers outside \r\n\r\nof current EOL spectrum.\r\n\r\n\u00a3 Fred will analyze the offerings and pricing structures used by competitors. \r\n\r\n\u00a3 Sheri will get with internal data owners to (in)validate current \r\n\r\nspreadsheet numbers and identify customers with high year-over-year increases \r\n\r\nin EOL transaction volume.\r\n\r\nExpenses\r\n\r\n\u00a3 James will take a harder look at the expenses. We wonder if number of \r\n\r\ntransactions is the best method to use. What is the real cost driver? Where \r\n\r\nare the \u00a3 breaking points\u00a3, or transaction levels where we must invest further \r\n\r\ninto offer services to additional customers?\r\n\r\nStrategy\r\n\r\n\u00a3 Beth Apollo will schedule a meeting with Beth Perlman, Jenny Rub, Rahil, et \r\n\r\nal to discuss ongoing big picture.\r\n\r\n\u00a3 Beth will also schedule a meeting with Mark Taylor, to include Rahil and \r\n\r\nDale. They will discuss points on the service level agreement that we will \r\n\r\nuse with our external customers. \r\n\r\n\r\n\r\n*****\r\n\r\nEDRM Enron Email Data Set has been produced in EML, PST and NSF format by ZL Technologies, Inc. This Data Set is licensed under a Creative Commons Attribution 3.0 United States License <<http://creativecommons.org/licenses/by/3.0/us/>>. To provide attribution, please cite to \"ZL Technologies, Inc.\" (<http://www.zltech.com>).\r\n\r\n*****"

"CC": "",
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"From": "Beth Apollo",
"Received Date": "2001-03-12T09:57:00+00:00",
"Sender": "Beth Apollo",
"Sent": "2001-03-12T08:57:00+00:00",
"Subject": "FW: Minutes from Back Office Services meeting held morning of 3-12",
"To": "Sally Beck",
"added_to_mongoedb_date": "2024-10-02T18:57:51.039000"
}

Example 1: Neo4J Structure

```
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meeting held morning of 3-12', 'id':  
'00000000E07E48D42CA1744D97141ED6DC62088607000EDCB8D372C9FF42AB26B26380FDCE520000000010C00000EDCB8D372C9FF  
42AB26B26380FDCE5200008346B80F0000'}>>  
<Record n=<Node element_id='4:d41977f5-e531-41c1-ada3-b7032cdbac44:3679' labels=frozenset({'Email'}) properties={'date':  
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meeting held morning of 3-12', 'id':
```


Example 1: ChromaDB Structure

ID: 3ab3480580f011ef9b5c0023a4024c29

Document: FYI – just so you can see what went on this week, when you return.

Beth

-----Original Message-----

From: Philipson, Fred

Sent: Monday, March 12, 2001 1:57 PM

To: Apollo, Beth; Neuner, Dale; Thomas, Sheri; 'jdenny@enron.com'

Cc: Scribner, James; Jafry, Rahil

Subject: Minutes from Back Office Services meeting held morning of 3-12

All:

Here's a summary of our meeting this morning. As we begin to lay the groundwork for this project, I think it's important to summarize our thoughts and activities in writing. If any of you have comments or corrections, please feel free.

Thanks,

Fred Philipson

5-9323

Minutes from Back Office Services meeting held morning of 3-12

Attending:

James Scribner Trans Support Sheri Thomas Trans Support

Beth Apollo Trans Support Dale Neuner Trans Support

Jennifer De Boisblanc Trans Support Fred Philipson ENW Origination

Objective

Enron is sizing up the opportunity to offer internal back office processing services to external clients. Objective of this meeting was to understand the spreadsheet meant to estimate the potential P&L for this offering.

Overview

Looked at spreadsheet for validation:

£ Need to better determine the actual market for this service.

£ Need to better understand the current revenue and expense projections and assumptions, expanding on them to include customers not currently with Enron.

Ongoing:

Defining the size of the market:

Metadata: {

"BCC": "",

"CC": "",

"Folder": "Inbox",

"From": "Beth Apollo",

"Received Date": "2001-03-12T09:57:00+00:00",

"Sender": "Beth Apollo",

"Sent": "2001-03-12T08:57:00+00:00",

"Subject": "FW: Minutes from Back Office Services meeting held morning of 3-12",

"Summary": "A March 12, 2001, meeting at Enron discussed offering internal back office processing services to external clients to expand the customer base beyond Enron employees.",

"To": "Sally Beck",

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"added_to_mongodb_date": "2024-10-02 18:57:51.039371+00:00",

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"entry_id": "00000000E07E48D42CA1744D97141ED6DC62088607000EDCB8D372C9FF42AB26B26380FDCE5200000000",

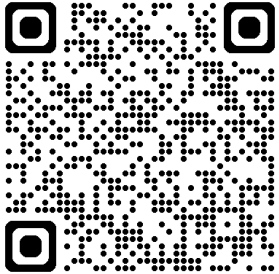
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}

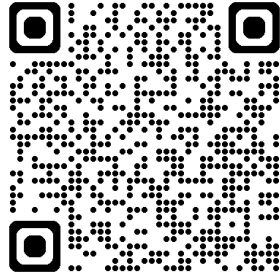
Connect With Us

Cameron Rohn

LinkedIn



GitHub



Email: cameron@cameronrohn.com

Jackson Arnold

GitHub



LinkedIn



Email: jacksonarnold96@gmail.com