

A world map with a dark blue background. The map is overlaid with a network of glowing blue nodes and connecting lines, representing a global network or data flow. The nodes are concentrated in major regions like North America, Europe, and Asia. The text is centered over the map.

**LLM for better developer
learning of your product**

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Developer Advocate | Ex-Lead at Microsoft |
Apache Software Foundation Comitter



*Connect on
LinkedIn*





Agenda



Intro

AI and DevRel

Tooling

Demo

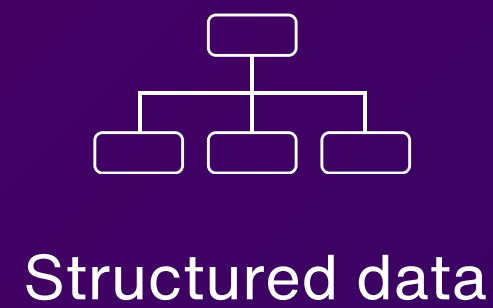
What is DevRel!?

**How AI Changes
Developer Relations**

**How DevRel practitioners
are using AI tools**

**Build a QA AI bot for
Discord server**

Large Language Model



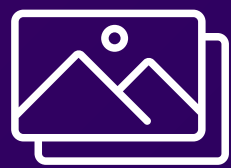
Text



Voice



3D signals



Images



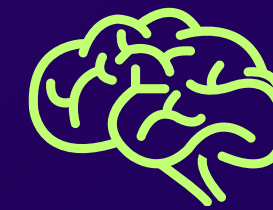
Training



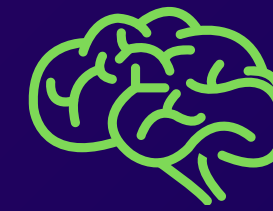
Adaptation



Information extraction



Instruction following



Object recognition



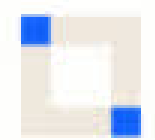
Image captioning



Q&A



Sentiment analysis





Discounts tracker with LLM App

Choose data sources

Choose an option

Upload a CSV file



Drag and drop file here
Limit 200MB per file • CSV

Browse files

Search for something

What discounts are looking for?



Google Drive Alerts with LLMs

How can I help you today?

W

Press Enter to apply

How to query your data

Enter your question, optionally ask alerted.

Example: "When does the magic col campaign start? Alert me if the start changes".

[VIEW THE SOURCE CODE HERE](#)

Current Alerts:

Let's add another document

"We had a good quarter and our momentum continues to grow," said Mark Zuckerberg, Meta founder and CEO. "Our AI work is driving good results across our apps and business. We're also becoming more efficient as we real build better products faster and get ourselves in a stronger position to deliver our long-term vision."

First Quarter 2023 Financial Highlights

Revenue, operating expenses and production costs	Three Months Ended March 31,		% Change
	2023	2022	
Revenue	\$ 26,447	\$ 21,433	23%
Costs and expenses	21,413	18,396	16%
Operating income	\$ 5,034	\$ 3,037	66%
Operating margin	19%	14%	
Provision for income taxes	\$ 1,096	\$ 660	64%
Adjusted net income	\$ 3,938	\$ 2,377	66%
Total income	\$ 4,796	\$ 2,825	70%
Manufacturing per share (EPS)	\$ 1.36	\$ 1.01	35%

First Quarter 2023 Operations and Other Financial Highlights

- **Family daily active people (DAP)** – DAP was 2.02 billion on average for March 2023, an increase of 2% year-over-year.
- **Family monthly active people (MAP)** – MAP was 3.07 billion as of March 31, 2023, an increase of 2% year-over-year.
- **Facebook daily active users (DAU)** – DAU was 1.94 billion on average for March 2023, an increase of 2% year-over-year.
- **Facebook monthly active users (MAU)** – MAU was 3.00 billion as of March 31, 2023, an increase of 2% year-over-year.
- **Ad impressions and price per ad** – In the first quarter of 2023, ad impressions delivered across our Family of Apps increased by 20% year-over-year and the average price per ad increased by 17% year-over-year.
- **Revenue** – Revenue was \$26.4 billion, an increase of 23% year-over-year, and an increase of 17% year-over-year as a result of our strong performance.
- **Costs and expenses** – Total costs and expenses were \$21.4 billion, an increase of 16% year-over-year. This includes changes related to our restructuring efforts of \$1.34 billion in the first quarter of 2023.
- **Capital expenditures** – Capital expenditures, including principal payments on finance leases, was \$1.0 billion for the first quarter of 2023.
- **Share repurchases** – We repurchased \$4.21 billion of our Class A common stock in the first quarter of 2023, as of March 31, 2023, we had \$41.75 billion available and authorized for repurchases.
- **Cash, cash equivalents, and marketable securities** – Cash, cash equivalents, and marketable securities was \$17.46 billion as of March 31, 2023.
- **Long-term debt** – Long-term debt was \$2.02 billion as of March 31, 2023.
- **Headcount** – Headcount was 77,114 as of March 31, 2023, a decrease of 1% year-over-year. Substantially all employees impacted by the layoffs announced in November 2022 and the changes reflected in our reported headcount as of March 31, 2023. Further, the employees that would be impacted by the 2023 layoffs are included in our reported headcount as of March 31, 2023.



Structure unstructured data into tables, e.g. turning PDF files with financial data into SQL tables

"What is the net income for Q1 for Alphabet?"



Real-time data syncing & Easy alert setup

Alert me when the date of a campaign is postponed, or a deadline is extended.
Alert me when import regulations change.

● LIVE ▶

Ask questions using a knowledge base that is frequently updated, for instance in Dropbox or OneDrive.

"How does the AI impact my job as a...?"

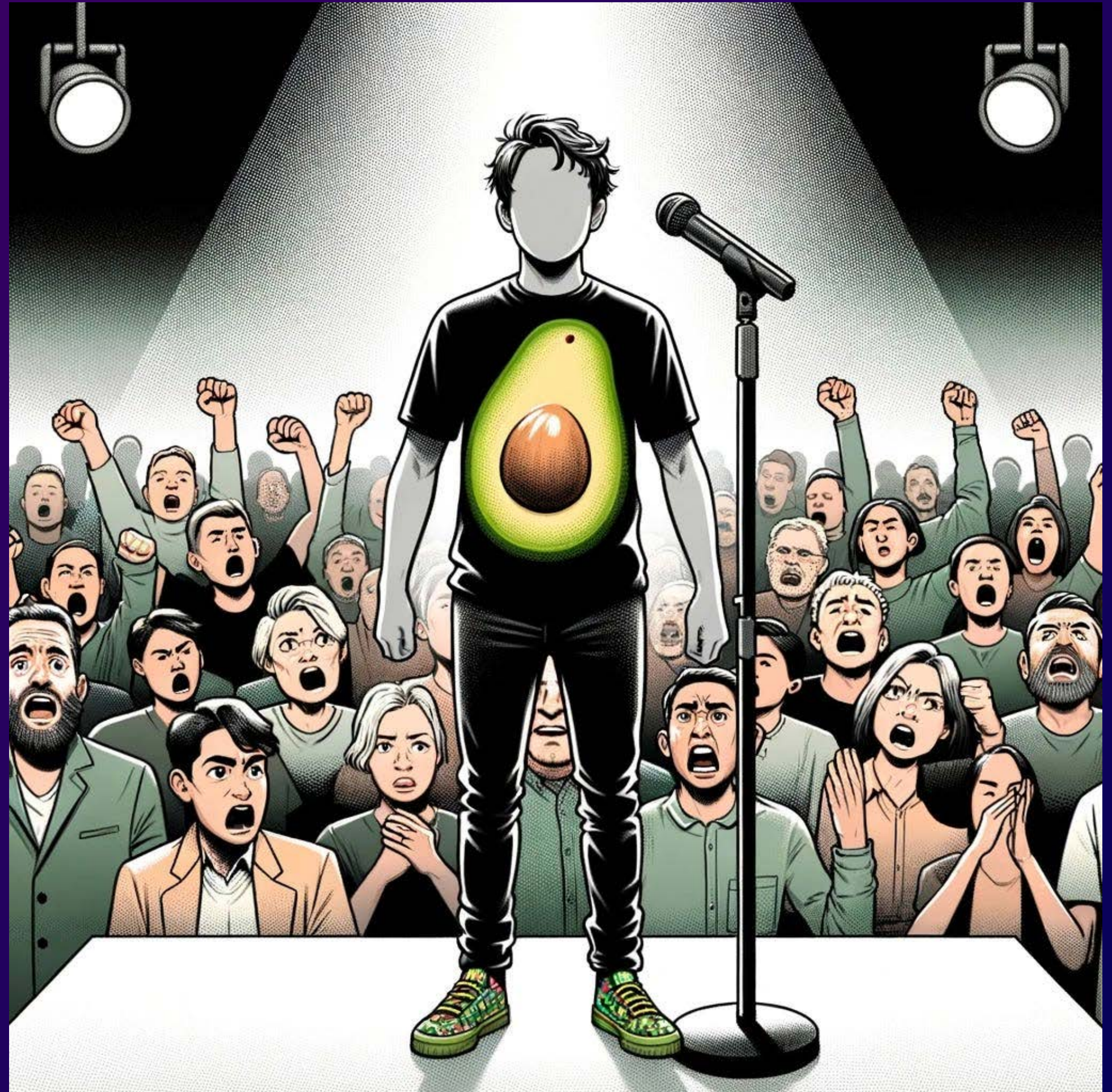


Discount finder

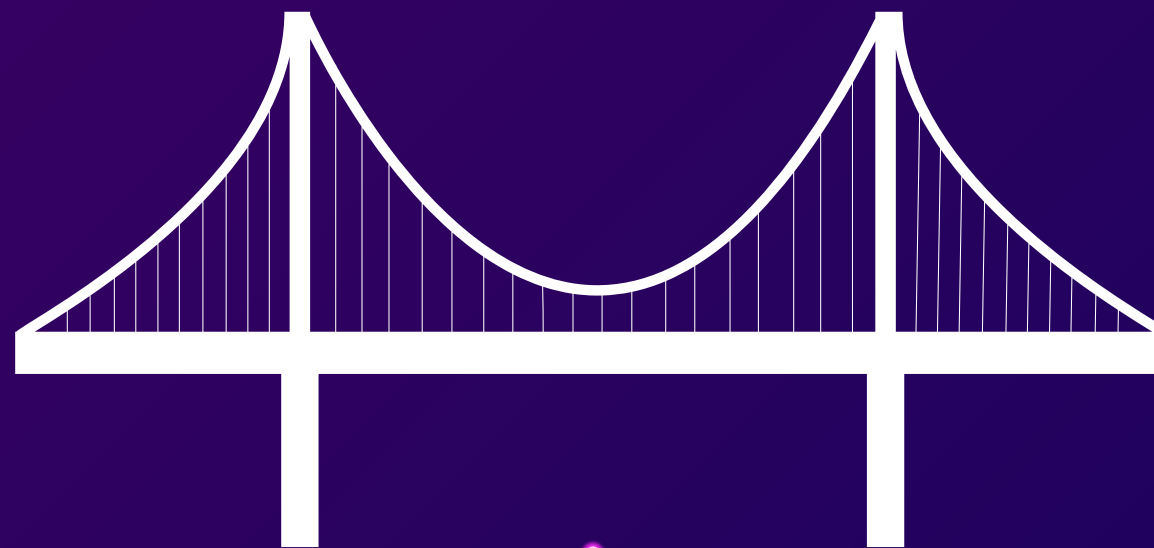
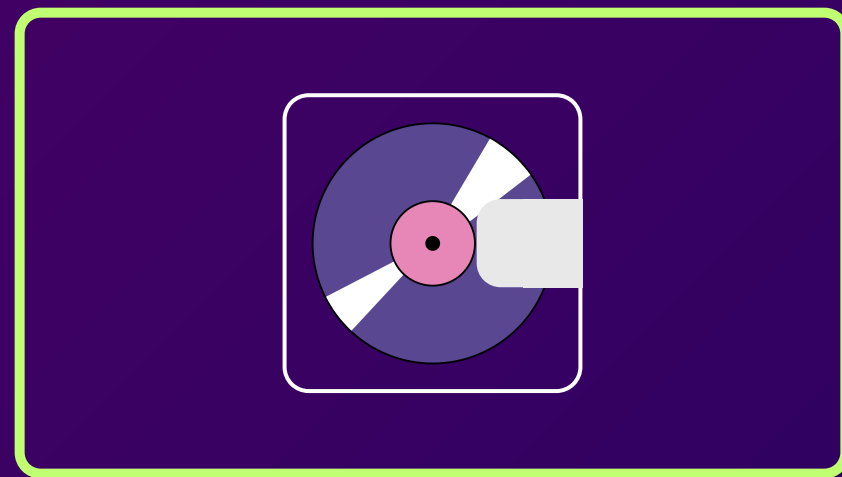
"Show me discount in Nike shoes"



What is DevRel?

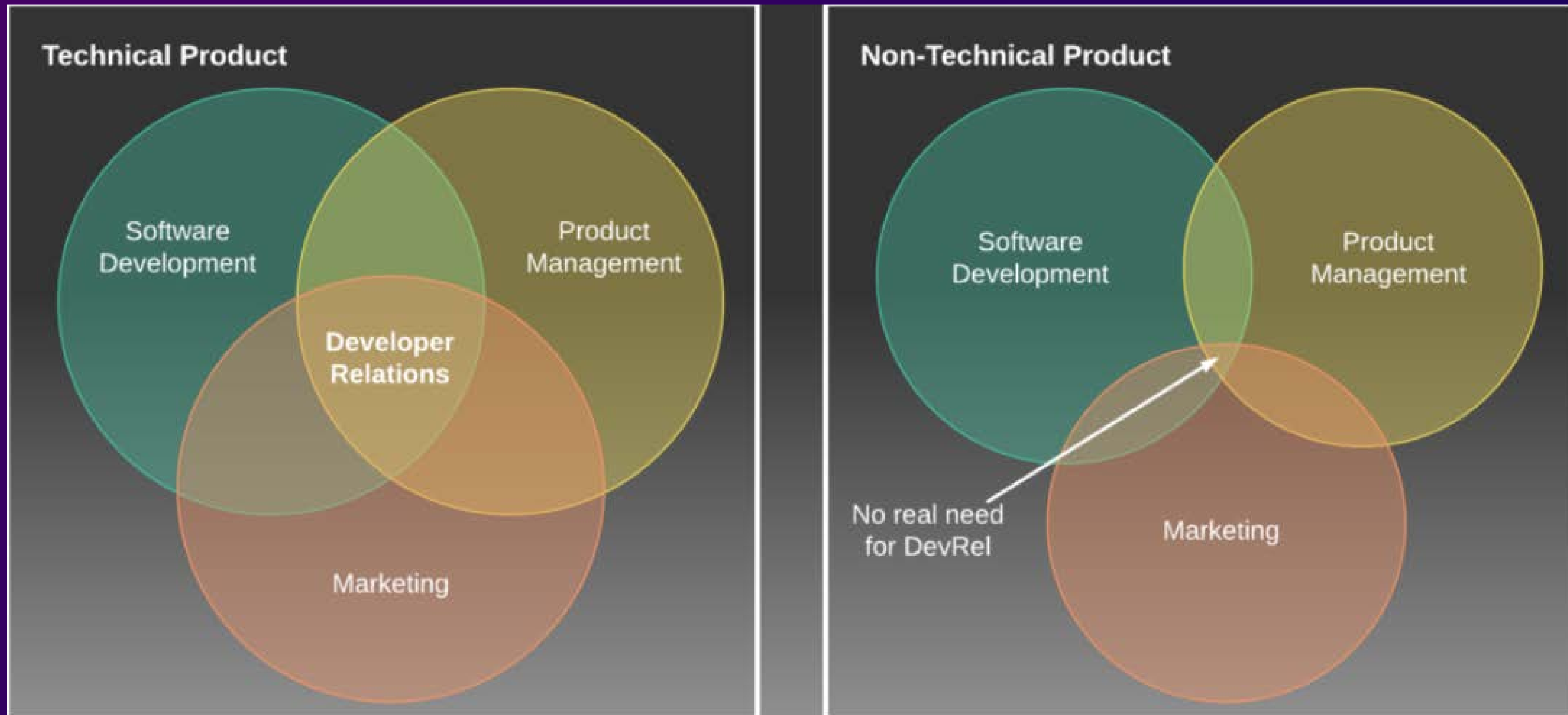


The DevRel "Bridge"



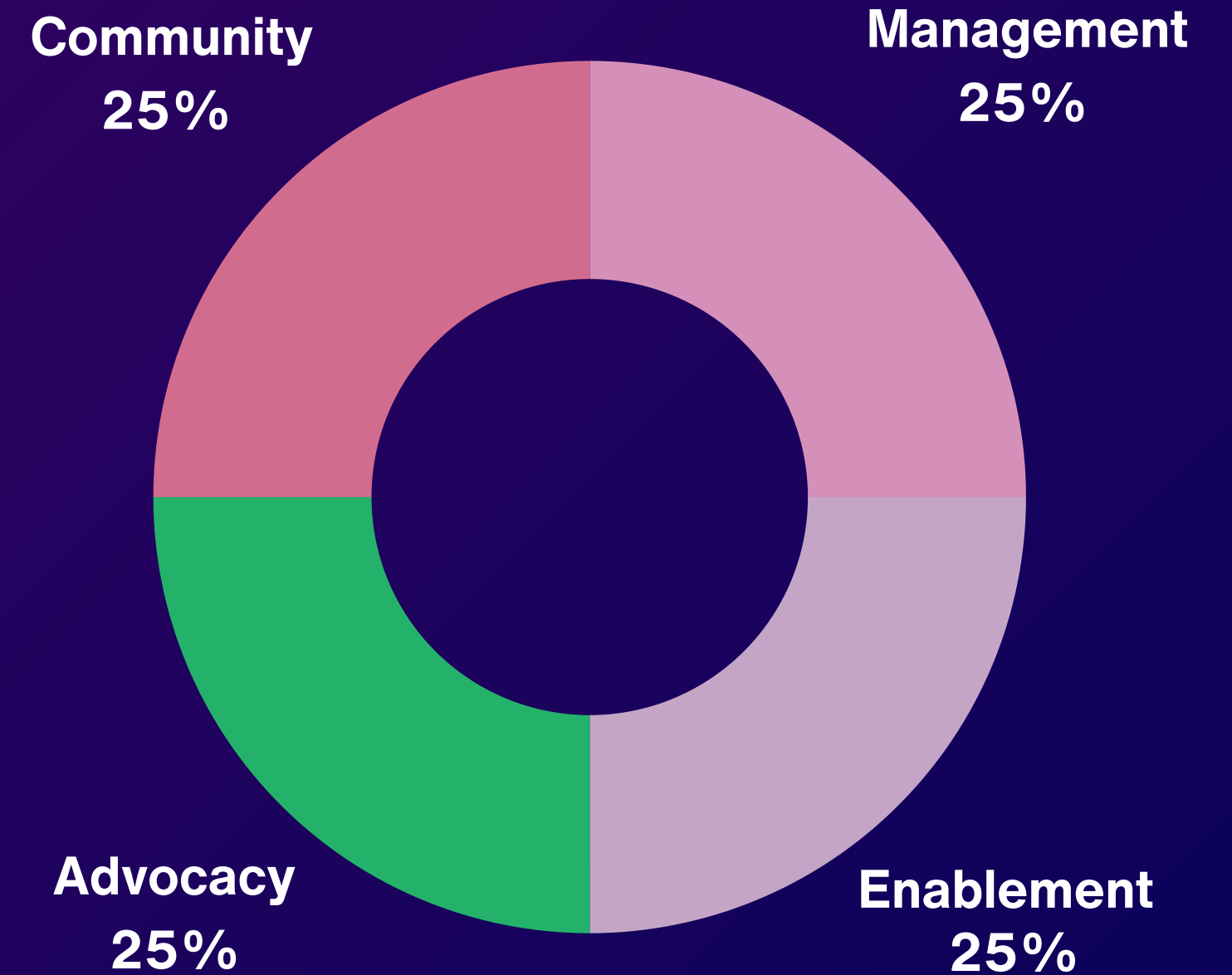
DevRel

What is DevRel?




4 pillars of developer relations

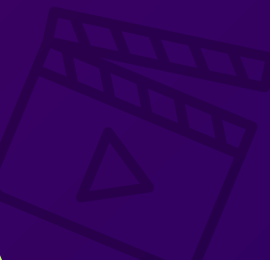
- Developer marketing
- Developer enablement
- Developer advocacy
- Developer community



Developer relations enabled



Developer education:
documentation,
tutorials, videos,
guides.



Developer experience:
API design, SDKs,
reference apps,
sample code.



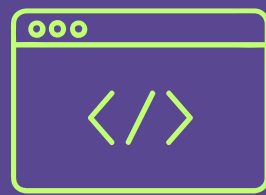
**Support and developer
success.**



How **AI** Changes Developer Relations



**Speeding up the
documentation
process.**



**Creating sample
codes.**



**Supporting
developer
requests.**



**Easier knowledge
search.**

What **AI** Writing Does Do Well

-
- Generate short descriptions of new articles
 - New variations of titles for blog posts
 - Come up with definitions for generic terms
 - Documenting our API/SDKs
-

What **AI** Writing Doesn't Do Well

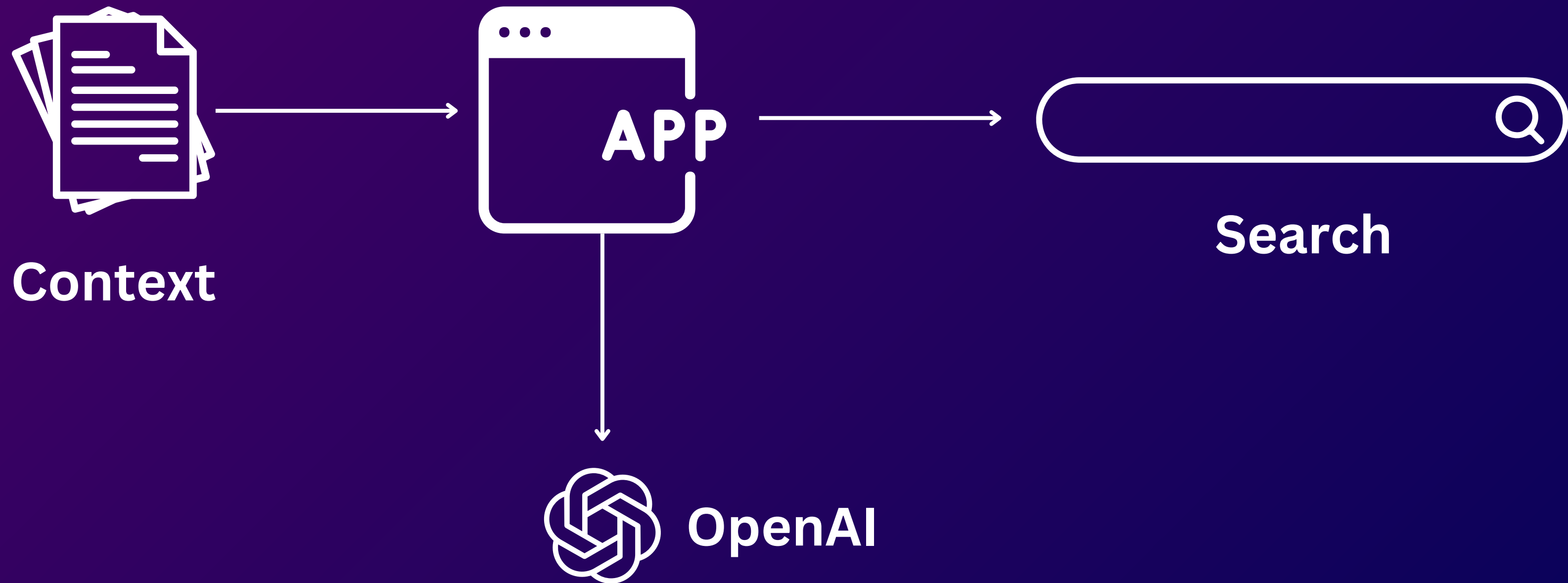
With personal experience
or realistic examples

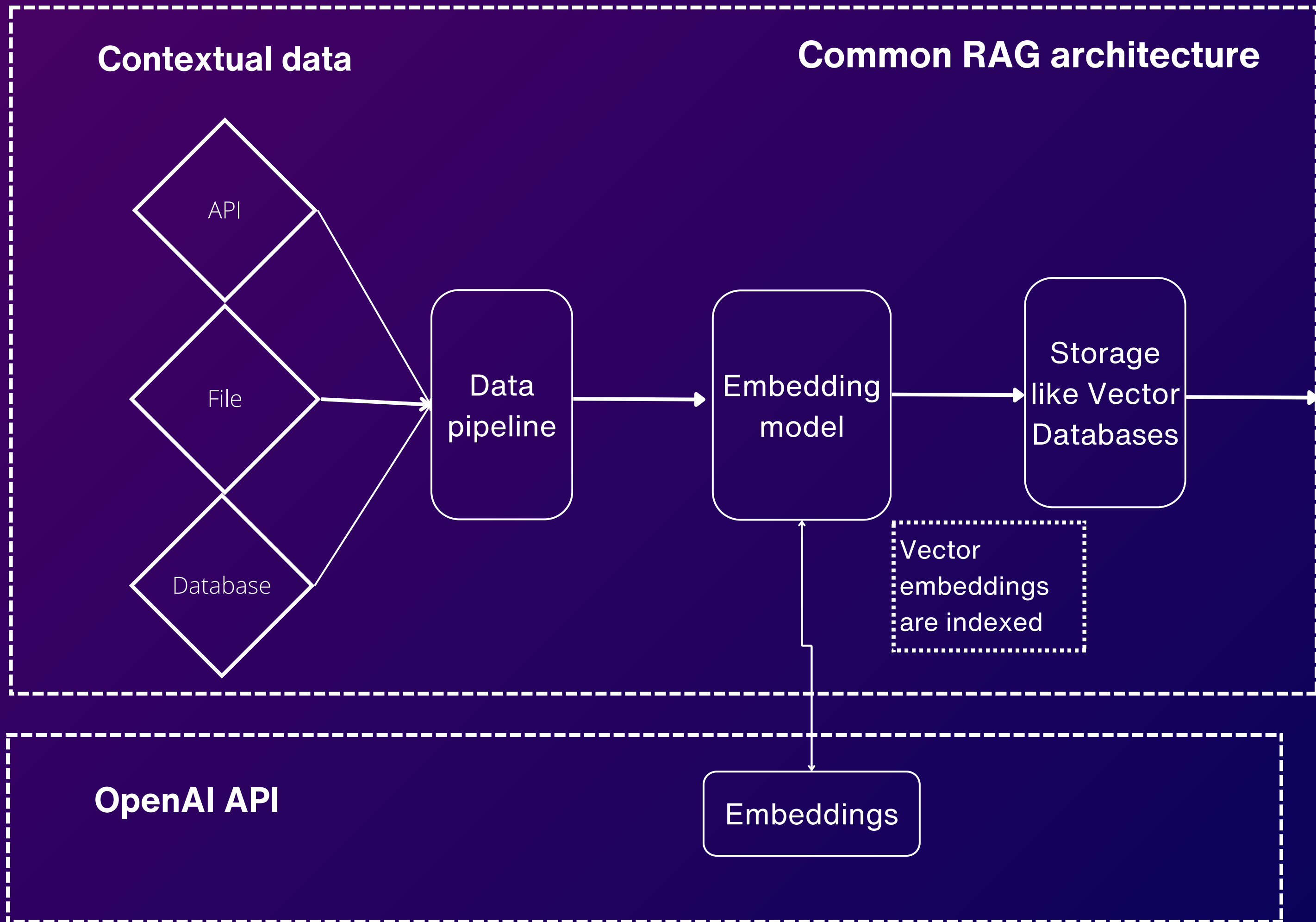
It struggles to go deeper
into topics.

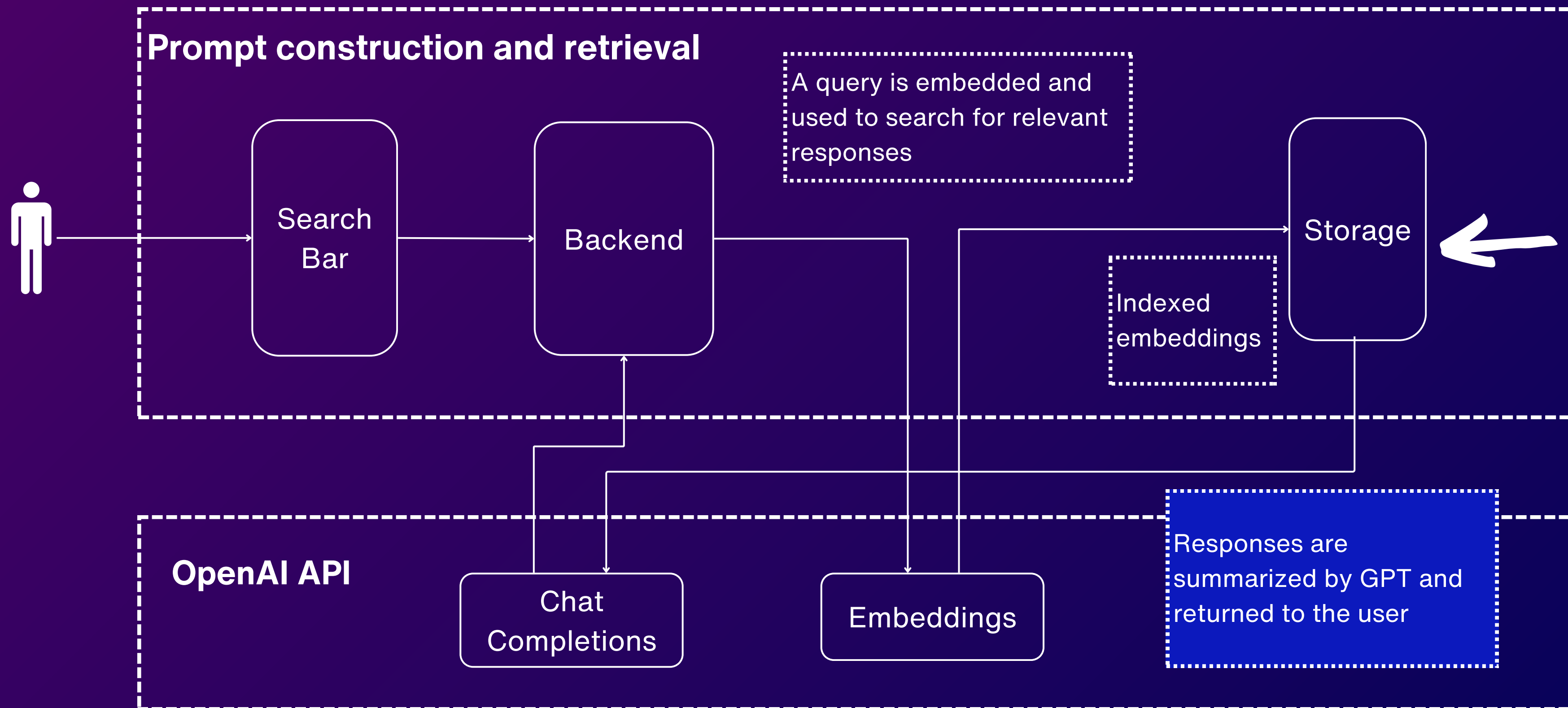
How **AI** is helping me

AREAS FOR AI ENHANCEMENT	AVENUES TO EXPLORE
Your work	Drafting blog posts, generating docs, code completion for sample code, etc
Developer use cases	"Our APIs + AI APIs", probably through a CRUD lens to start
Developer experience	GitHub Copilot for Docs, Discourse integration, use case recommendations, SDK and dev tool enhancements, etc
Product features	Common use cases that are tedious to build, the recently-possible-thanks-to-AI, etc

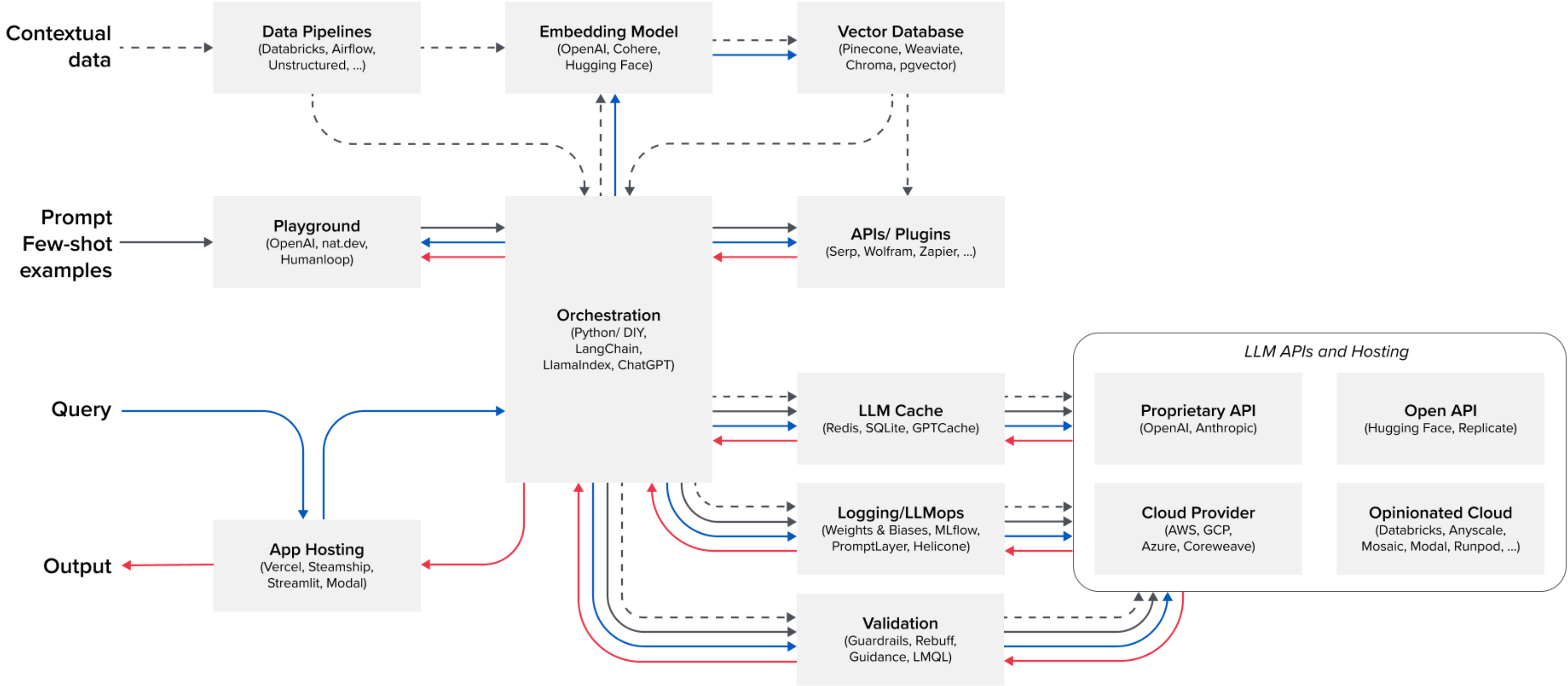
Add custom knowledge to AI







Emerging LLM App Stack



The Generative AI Infrastructure Stack v1

A work in progress

Production Monitoring & Observability

LLM OPS LangSmith PromptLayer Weights & Biases	OBSERVABILITY, MONITORING, ALERTING arize fiddler Helicone DATADOG Amplitude baserun GANTRY vellum	USER ANALYTICS Aquarium FIREWALLS Arthur Shield ROBUST INTELLIGENCE
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Apps & Workflows

Retool Streamlit gradio

Developer Tools/Infra

APPLICATION FRAMEWORKS LangChain FIXIE	DATA MANAGEMENT mindsdb UNSTRUCTURED LlamaIndex Neum AI	VECTOR DATABASES Pinecone chroma milvus Weaviate drant supabase MongoDB
---	--	---

Model Tuning

MODEL TRAINING & FINE TUNING Weights & Biases Amazon SageMaker Fireworks.ai anyscale Hugging Face	DATA LABELING scale surge Snorkel	SYNTHETIC DATA gretel
--	--	---------------------------------

Compute & Inference

GPU SUPPLY CoreWeave together.ai aws Lambda CrusoeCloud Google Cloud FOUNDRY ARMADA Azure	PAAS Replicate baseten RunPod Modal BANANA Lepton AI
---	---

Foundation Models

TEXT GPT-4 Claude cohere Llama 2 Falcon Mistral AI contextual-ai Hugging Face AI21 labs	IMAGE MidJourney Stable Diffusion VIDEO Stable Diffusion	AUDIO IIElevenLabs RESEMBLE.AI WELLSAID MURF.AI PlayHT Bark descript	CODE Codex CodeGen StarCoder OPEN SOURCE Hugging Face
	3D intel NVIDIA Luma AI		

LLM App = ~~VectorSync~~ + ~~VectorDB~~ + ~~Langchain~~ + ~~Redis~~ + ~~FastAPI~~

LLM frameworks LLM Caches API builders

Pathway - is an application layer in Python for batch and streaming data processing

+

LLM App - is a framework for Pathway to build AI apps

=

Your AI data pipeline runs in real-time

What this simplification means for your GenAI projects

.pathway



**Short time
to market
(4-6 weeks)**



Lower costs



Security



Adaptability



**Full power
of the
Pathway
Framework
for your data
applications**

Unstructured Data

Connect unstructured sources such as documents, raw text files, PDF's, PowerPoint, etc.

Structured Data

Easily integrate structured data sources from Excel, SQL, Jsonlines etc.

Semi-Structured

Connect semi-structured data from API's like Slack, Salesforce, Notion, etc.

Live Data

Connect streaming data sources like Kafka, RedPanda etc.

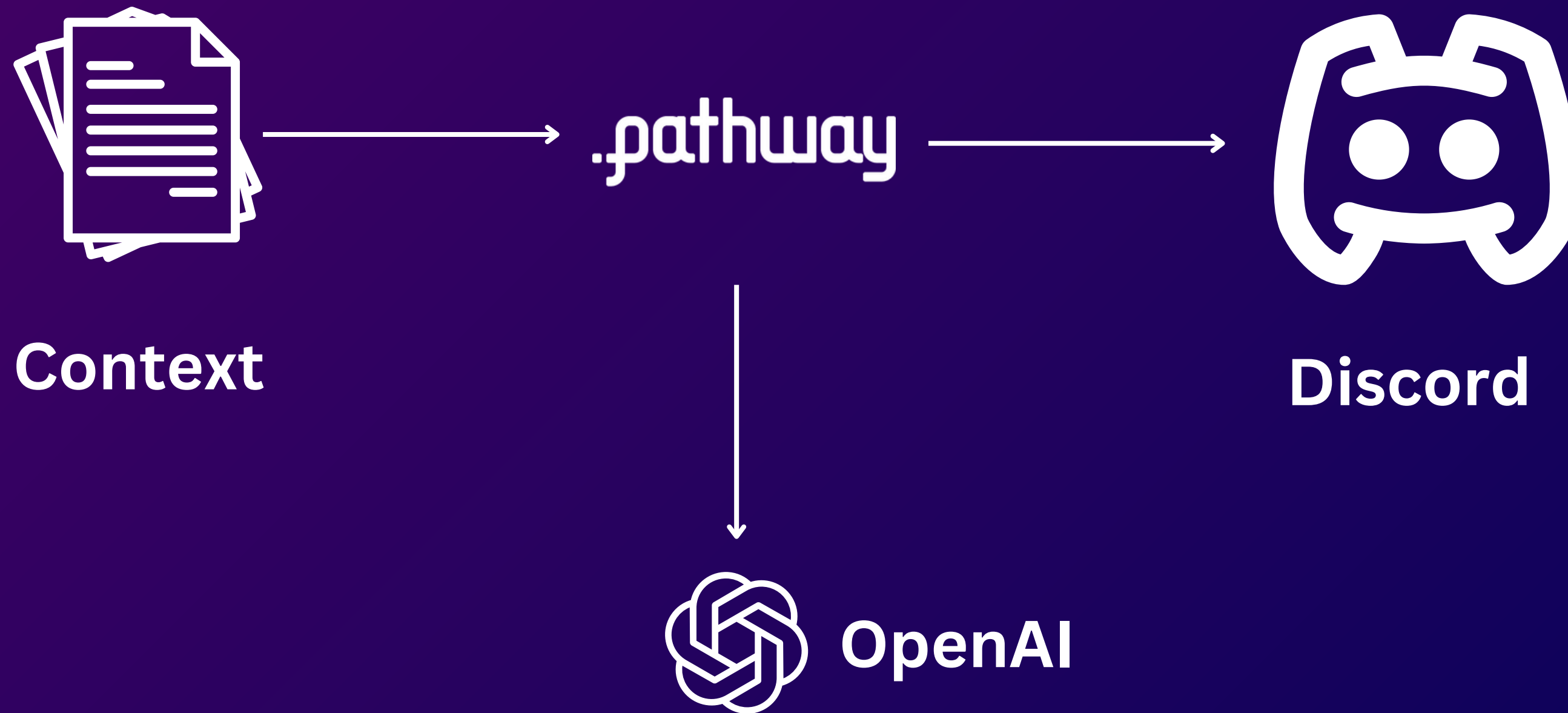


KEY FEATURES

- Built-in connectors: CSV, JSONLines, PDF, APIs, and more.
- User's role-specific response.
- Data and code reusability for offline evaluation.
- Model testing in static mode.
- Local Machine Learning models.
- Live data sources: Kafka, Debezium, Redpanda, and more.
- Join data from multiple data sources.
- Alerting when answers change based on fresh information.

To learn more about advanced features see: [Features for Organizations](#).

Discord **AI** Chatbot for Pathway Docs




```

it = m1.select(SmC=gl.ta(m1.dma).avg_v1)

# Use cast functions
# Schema: (t: int, avi: int)

it = gt.select(pw.this.t, avi=pw.cast(int, pw.this.avg_v1))

# Print the computed result
pw.debug.compute_and_print(it)

```

Please note that the schema of each table is mentioned in a comment next to its creation. Let me know if you need further assistance!



Bobur Yesterday at 21:42
What is Pathway about?



Pathway Assistant BOT Yesterday at 21:42
One moment, please, while I look into your request.

Pathway is a Python framework designed for data processing and analytics. It provides a high-level, expressive API for building data processing pipelines and performing complex operations on structured data. Pathway focuses on stream processing and batch processing, making it suitable for real-time data analysis and large-scale data processing tasks.

With Pathway, you can easily perform tasks such as filtering, transforming, joining, aggregating, and analyzing data. It supports various data sources, including CSV files, databases, and message brokers like Kafka. Pathway also provides powerful features for handling time-based operations, such as sliding windows and session windows.

Pathway promotes a functional programming style, allowing you to define data transformations using a composition of functions and operators. It also provides convenient methods for debugging and visualizing data during development.



Pathway Assistant

Pathway Assistant#5154 BOT

DISCORD MEMBER SINCE

7 Apr 2023

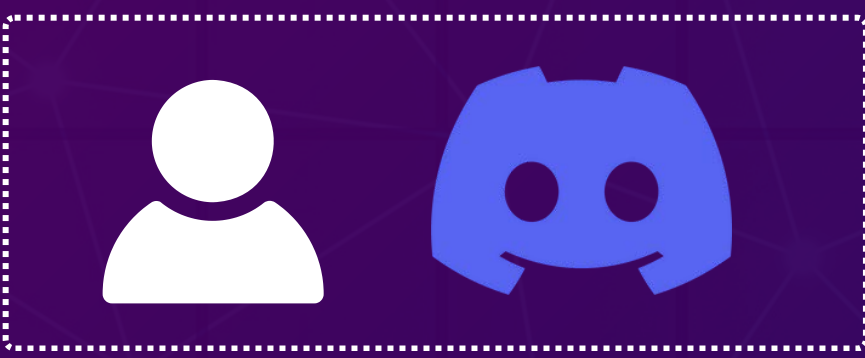
NOTE

Click to add a note

Activate Windows
Go to Settings to activate Windows.

SIMPLE ARCHITECTURE

Find knowledge

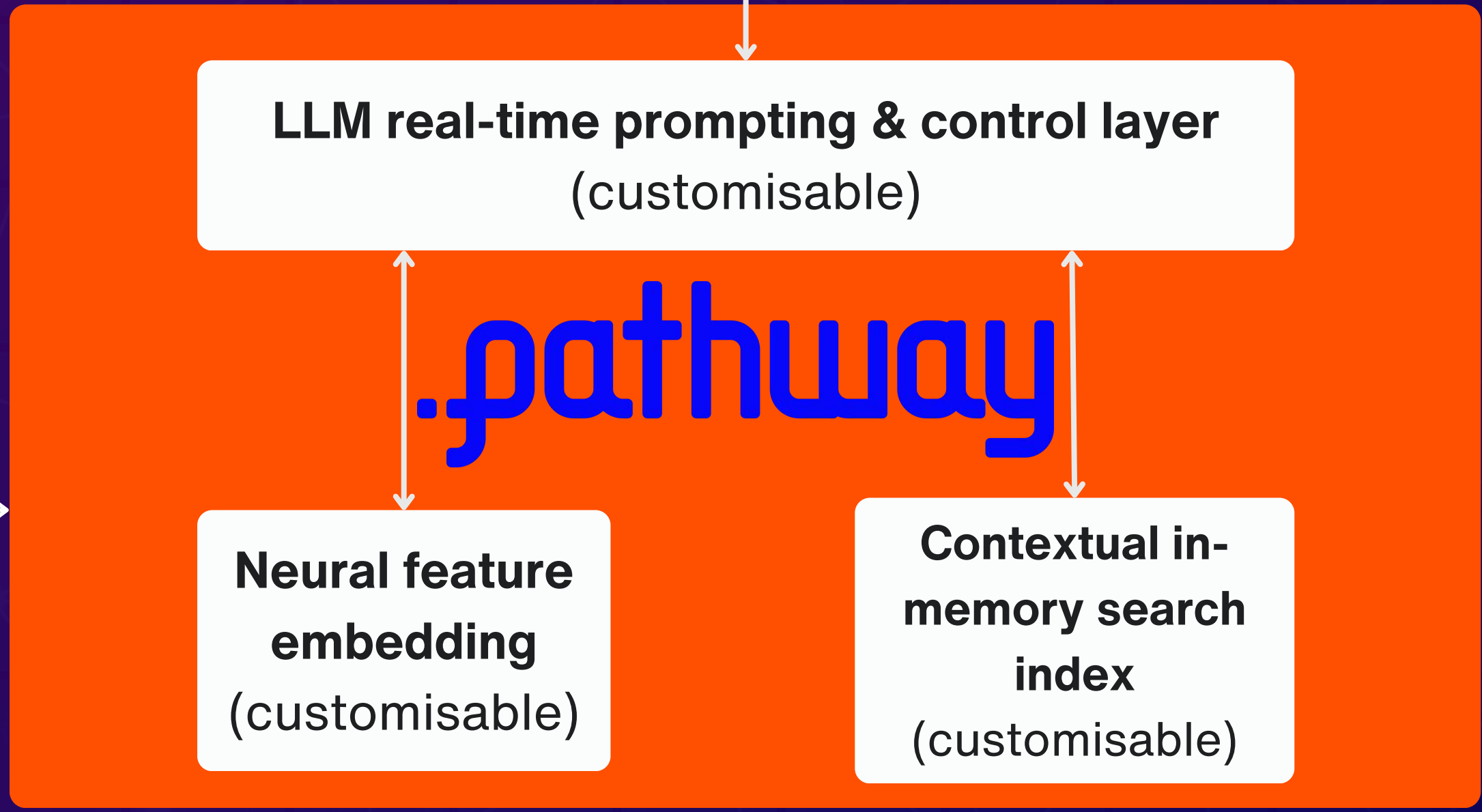


Real-time request/reply

Return relevant data

Real-time indexing and caching

- Other Data Sources
- Files
- API
- SDK



ChatGPT embedding, completion requests

Embedded, Prompt response



(or HuggingFace model; Llama)

CHALLENGES OF PRODUCTIONIZING CHATGPT

- 01 THE AMBIGUITY OF NATURAL LANGUAGES
- 02 COST AND LATENCY
- 03 SECURITY
- 04 BACKWARD AND FORWARD COMPATIBILITY
- 05 OFFLINE EVALUATION

```
# Real-time data coming from external data sources such as csv file
sales_data = pw.io.csv.read(
    "./examples/csv/data",
    schema=CsvDiscountsInputSchema,
    mode="streaming"
)

# Data source rows transformed into structured documents
documents = transform(sales_data)

# Compute embeddings for each document using the OpenAI Embeddings API
embedded_data = embeddings(context=documents, data_to_embed=documents.doc)

# Construct an index on the generated embeddings in real-time
index = index_embeddings(embedded_data)

# Given a user question as a query from your API
query, response_writer = pw.io.http.rest_connector(
    host=host,
    port=port,
    schema=QueryInputSchema,
    autocommit_duration_ms=50,
)

# Generate embeddings for the query from the OpenAI Embeddings API
embedded_query = embeddings(context=query, data_to_embed=pw.this.query)

# Build prompt using indexed data
responses = prompt(index, embedded_query, pw.this.query)

# Feed the prompt to ChatGPT and obtain the generated answer.
response_writer(responses)

# Run the pipeline
pw.run()
```


BUILD YOUR OWN LLM APP

Simply add `llm-app` to your Python project's dependencies.

Scan me



`pathwaycom/llm-app`

TAKEAWAYS

- AI as an accelerant, not a disruptor
- AI as a dual-edged sword in DevRel
- AI will enable a new class of users "Creators"

*Connect on
LinkedIn*



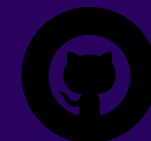
ThankYou



Bobur Umurzokov



@BoburUmurzokov



@Boburmirzo