PostgresML

RAG Masterclass

Why and how postgres simplifies RAG.

4/18/2024

RAG 101

Retrieval

Perform search over a dataset to get some relevant excerpts

Augmented Generation

Give the relevant excerpts as context to LLMs for text-generation

Why RAG

LLMs are not omniscient. RAG is useful for:

- Giving LLMs new / unknown data
- Reducing LLM hallucinations
- Improving LLM responses

Where is RAG currently used?

- Chatbots
- QA / Perplexity
- Decision Making

RAG 201

Retrieval

Perform search over a dataset to get some relevant excerpts

Augmented Generation

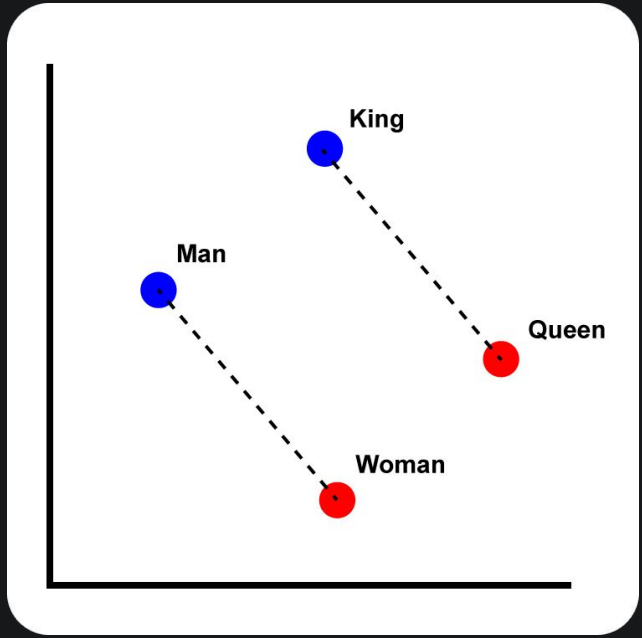
Give the relevant excerpts as context to LLMs for text-generation

Embeddings

Embedding of King:
[0.1, 0.2, 0.3, 0.4, ...]

Embedding of Queen:
[0.2, 0.3, 0.4, 0.5 ...]

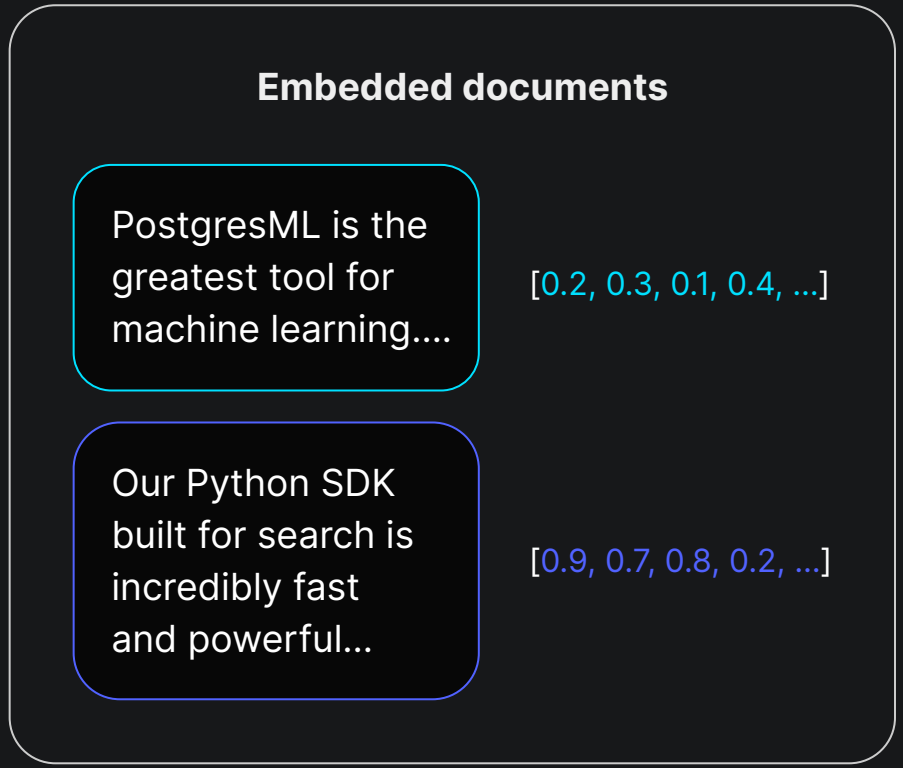
Embedding projector



https://en.wikipedia.org/wiki/Word2vec

Semantic search

What is PostgresML?:
[0.1, 0.2, 0.3, 0.4, ...]

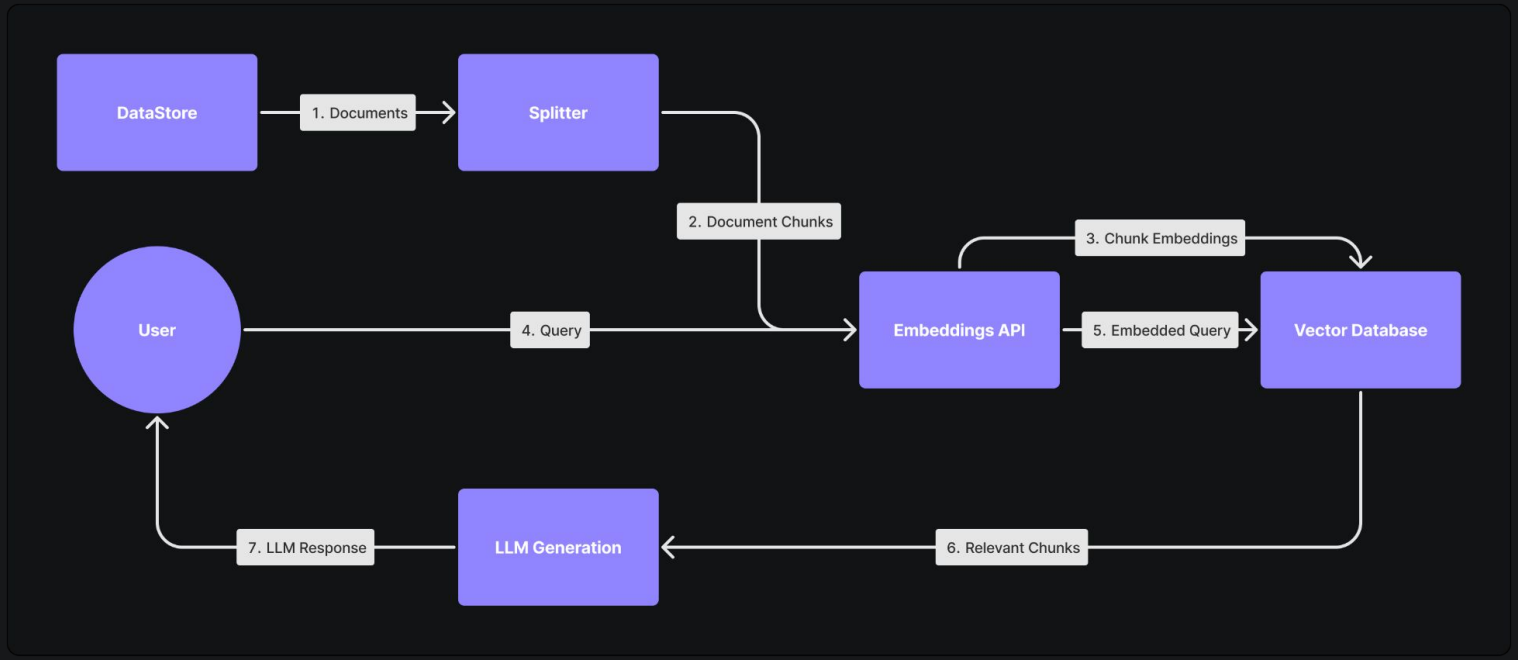


Augmented generation

BASE PROMPT:	+	RETRIEVED CONTEXT:	=	FINAL PROMPT:
What is PostgresML?		PostgresML is the greatest tool for machine learning....		**What is PostgresML?** PostgresML is the greatest tool for machine learning....

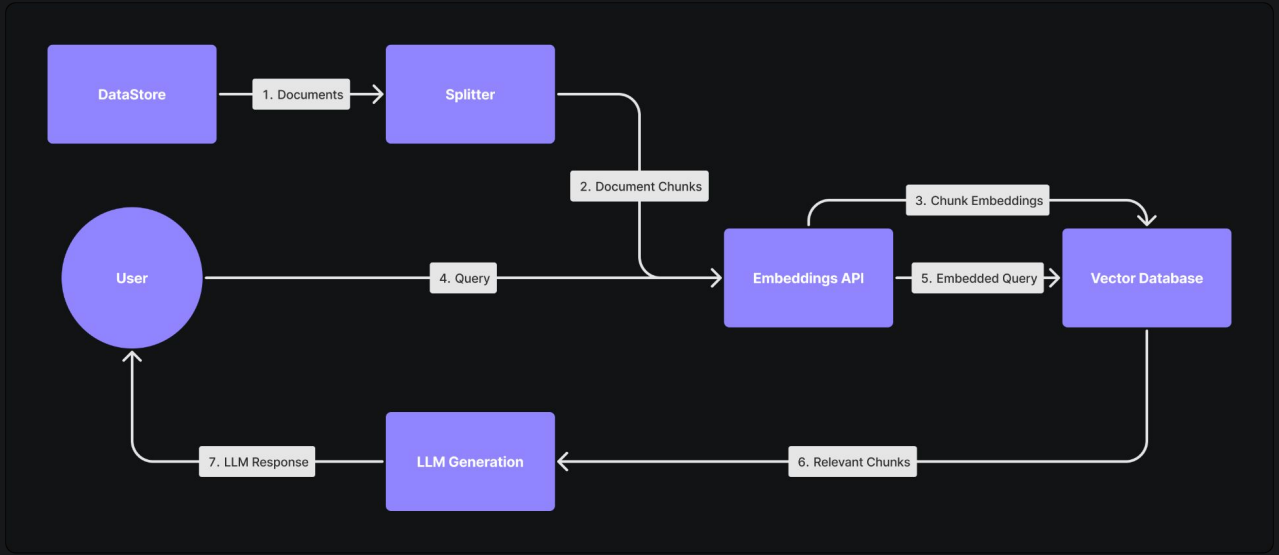
Why Postgres makes RAG easier

Typical RAG flow

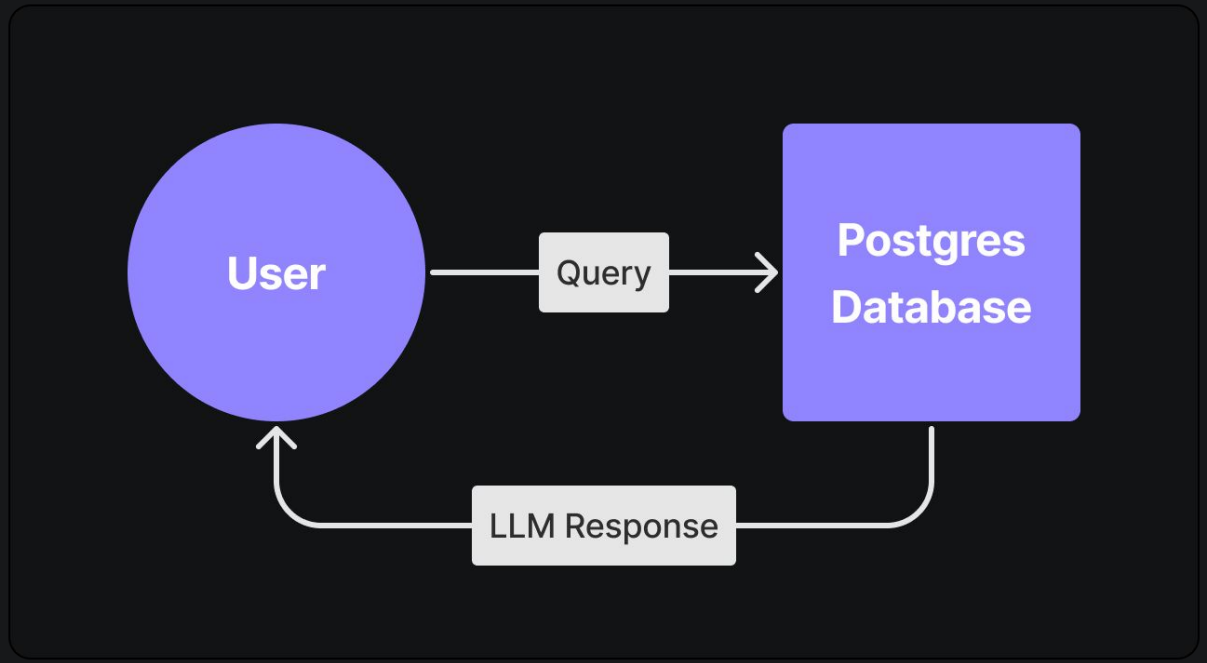


Pain points

- Data has to leave our database
- Microservice mayhem
- Vector Database???
- Poor performance - network latency

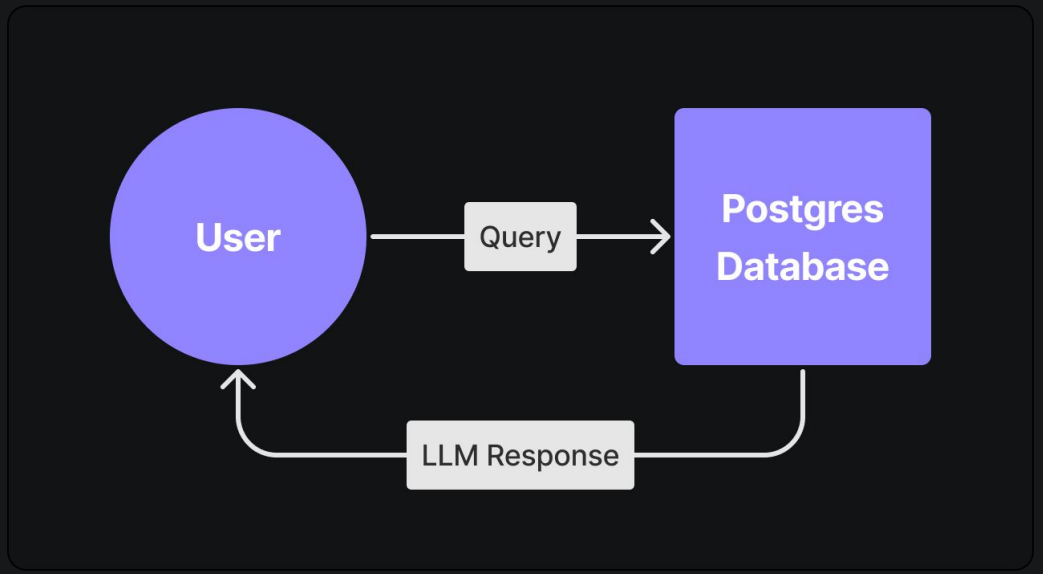


RAG flow with pgml and pgvector

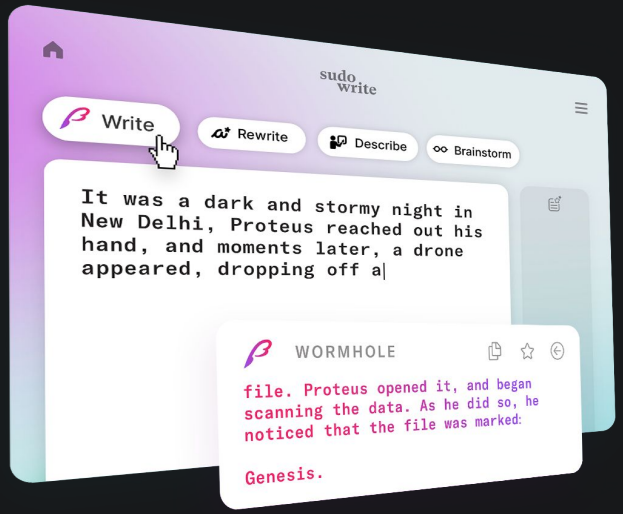


Solutions

- Data never leaves Database
- No microservices
- No new technologies
- High performance



Enter the real world



"I have a full proof of concept chatbot fully synced to document changes, all done in 3 hours flat."

Founder @ sudo write

Join us

- Contribute to our open-source projects, including pg-cat

We’re hiring:

Email: **Montana@postgresml.org**