Improving Retrieval for Q-A on Financial Documents

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Introduction

What is Retrieval Augmented Generation (RAG)?

01

The Problem

The Current Limitations of the RAG pipeline

02

Methods to Improve

Chunking Strategies, Metadata Annotations & Filtering, Query Expansion

03

Evaluation

Methods to measure the accuracy and quality of results

04

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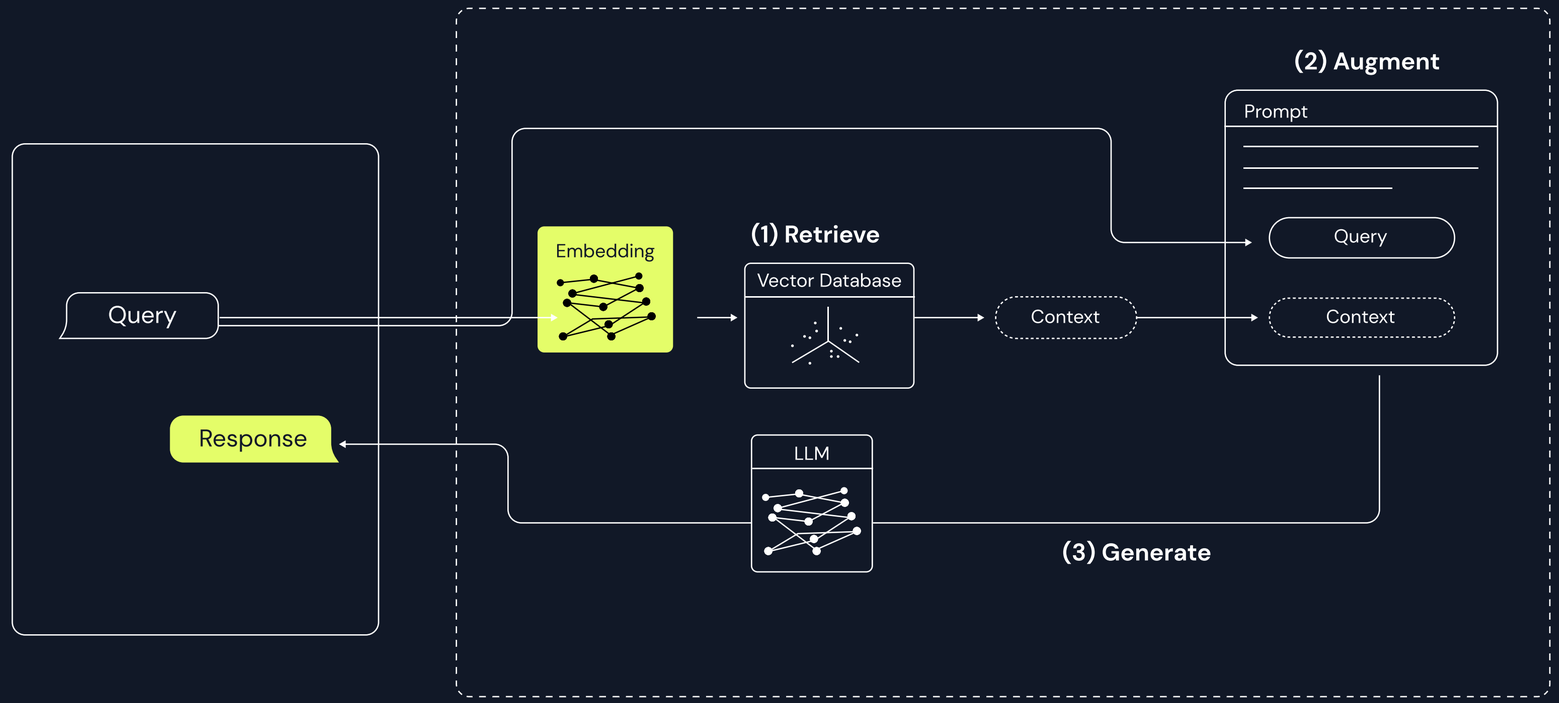
Retrieval Augmented Generation

- In-context knowledge injection
- Adds additional knowledge sources directly to the input query
- Effective in preventing hallucinations



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Limitations of Current RAG Pipe

Similarity
≠
Relevance

Ineffective Chunking
↓
Disregards document structure

Information is sparse
+
located in multiple different locations

Lack of Domain Specific Knowledge

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Chunking Strategies

Before Base RAG

Uniform Chunking

- All chunks are of the same size
- Disregards the document structure and the nature of the queries being asked
- Leads to chunks being incomplete or containing too much irrelevant information

New Improved

Recursive Chunking

- Dynamic strategy to divide the text
- Adapt more fluidly to the content
- Uses punctuation and other NLP indicators

Element Based Chunking

- Define sections based on headings and subheadings
- Be able to identify and separate tables as different chunks
- Can use predefined rules based on nature of financial documents for RAG

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Metadata Annotations and Filtering

By date, topic, company etc.

Annotate chunks of tables based on what they are

Enables chatting with multiple docs

Annotate chunks with summary or additional context

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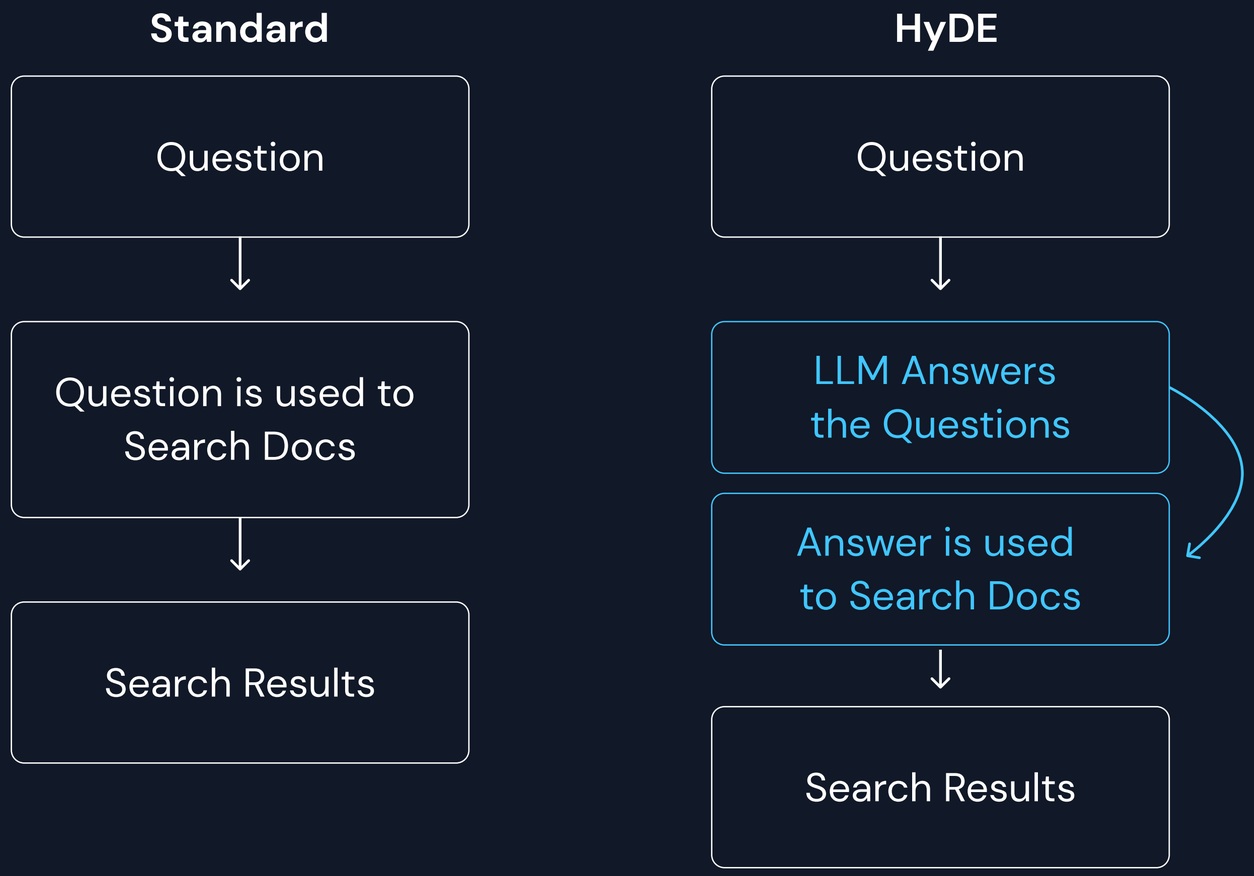
Query Expansion

HyDE – Retrieve chunks based on more than just the original query

Hypothetical Document Embeddings



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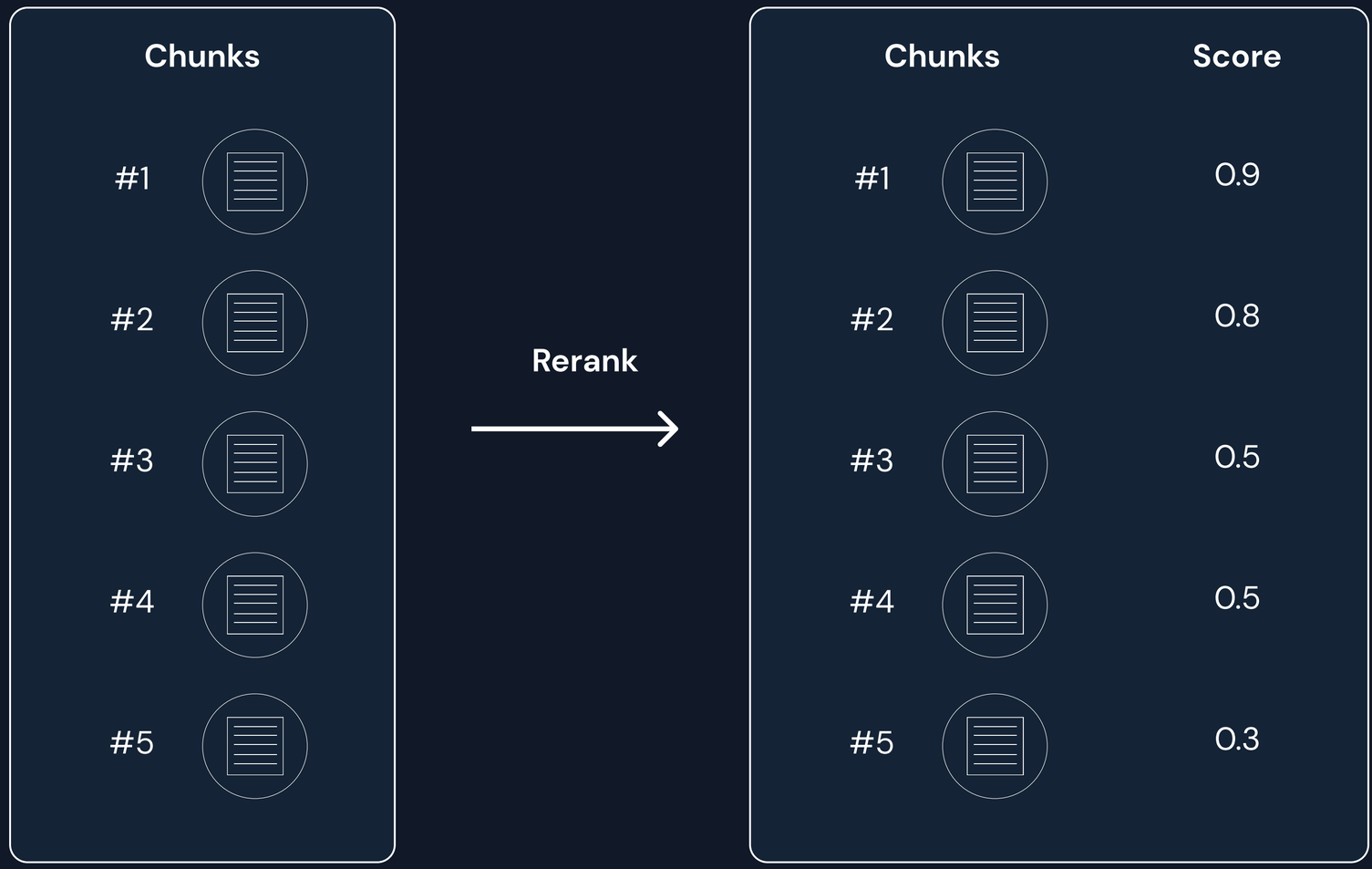
Reranking Chunks

Separate algorithm to reranks chunks by relevance rather than just similarity



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Evaluation

Retrieval Accuracy

- Page level and paragraph level accuracy
- RAGAS Score for Retrieval Quality

Answering Accuracy

- LLM evaluation (ex: GPT Score)
- Cosine Similarity/Rouge Score