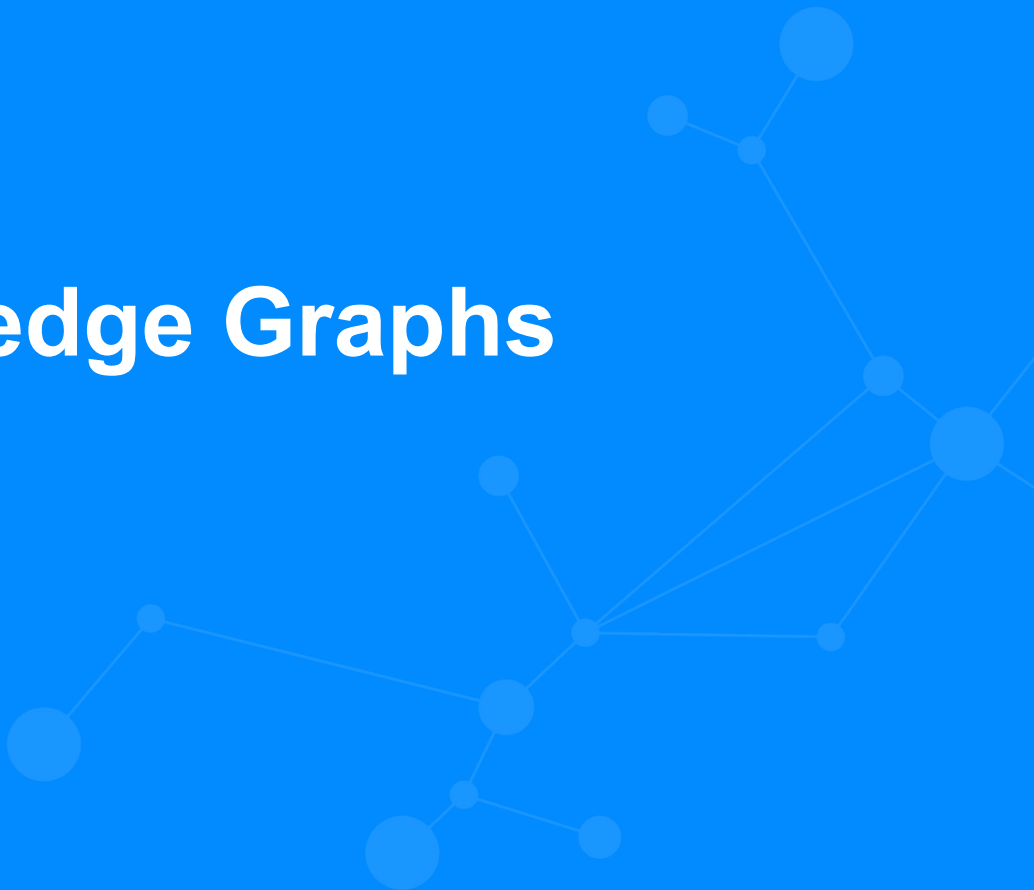


Going Meta #22: RAG with Knowledge Graphs



Recap of last session

Going Meta #21: Vector-based Semantic Search and Graph-based Semantic Search 🏆

95

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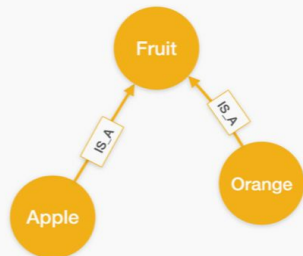
neo4j

DATA SEMANTICS

EXPLICIT (SYMBOLIC)



Representation



IMPLICIT (SUB-SYMBOLIC)



Representation

Apple	[0.2435, 3.7652, 0.00234, 456.66, ...]
Orange	[115.124, 29.7652, 4.2131, 2.431, ...]
Fruit	[0.0035, 17.661, 0.0113, 11.4566, ...]

DATA SEMANTICS

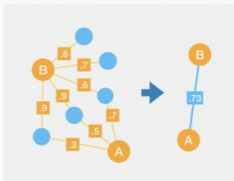
EXPLICIT (SYMBOLIC)



Similarity calculation

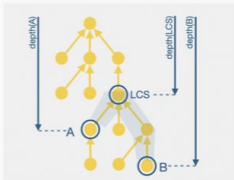
Structural

- ▶ Node similarity
- ▶ Overlap
- ▶ Jaccard



Taxonomy based

- ▶ Path
- ▶ Leacock-Chodorow
- ▶ Wu-Palmer

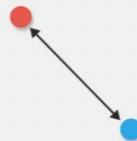


IMPLICIT (SUB-SYMBOLIC)

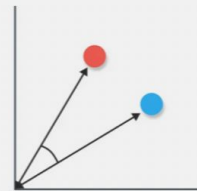


Similarity calculation

Euclidean



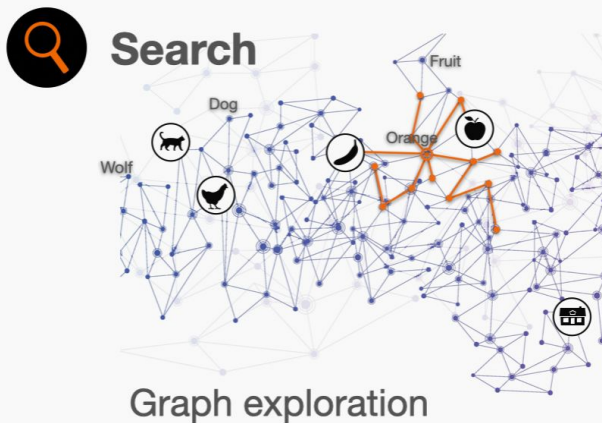
Cosine



Vector **distance** based

DATA SEMANTICS

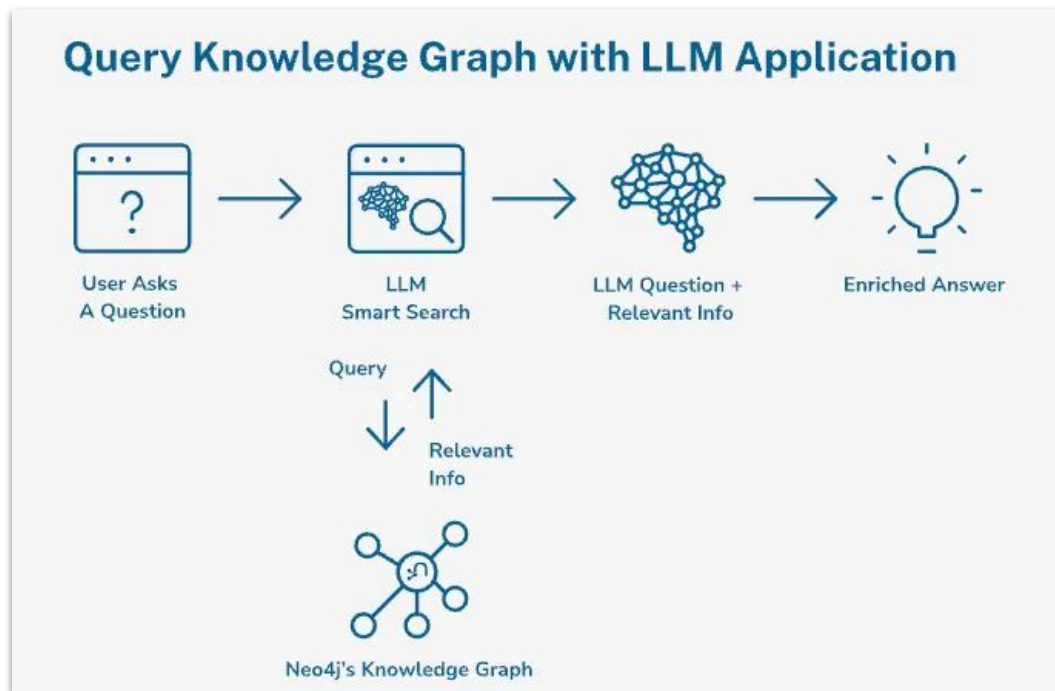
EXPLICIT (SYMBOLIC)



IMPLICIT (SUB-SYMBOLIC)



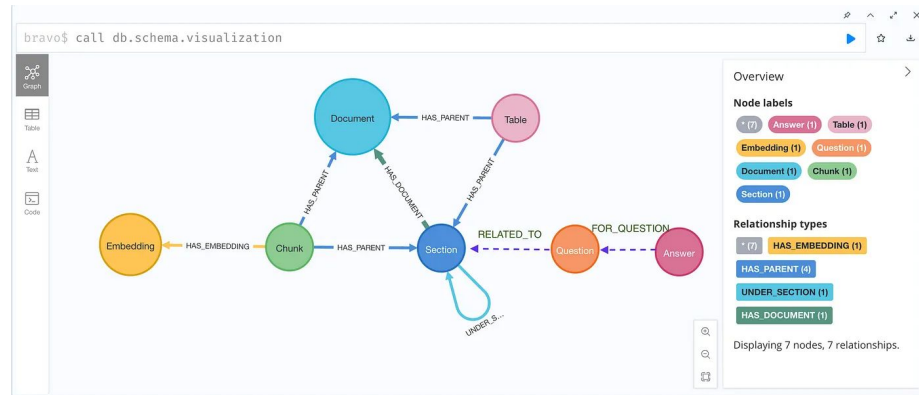
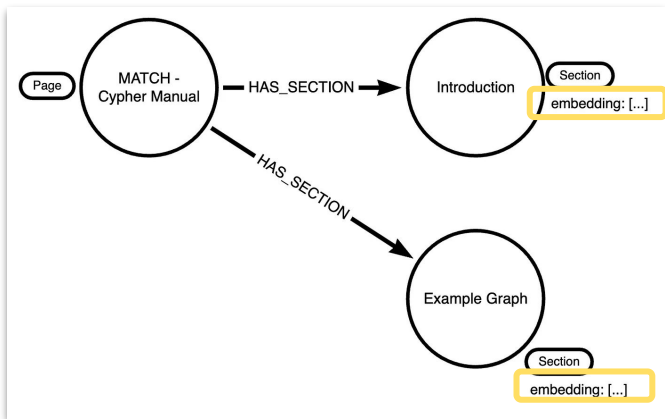
Today's topic: RAG



How do KG improve RAG?

Making retrieval **structure-aware**

<https://medium.com/@yu-joshua/adding-structure-aware-retrieval-to-genai-stack-373976de14d6>

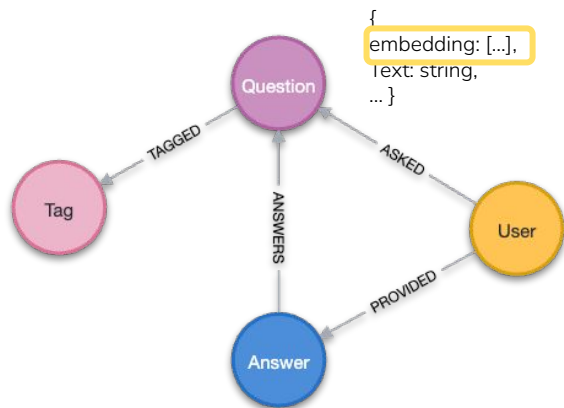


<https://medium.com/neo4j/building-an-educational-chatbot-for-graphacademy-with-neo4j-f707c4ce311b>

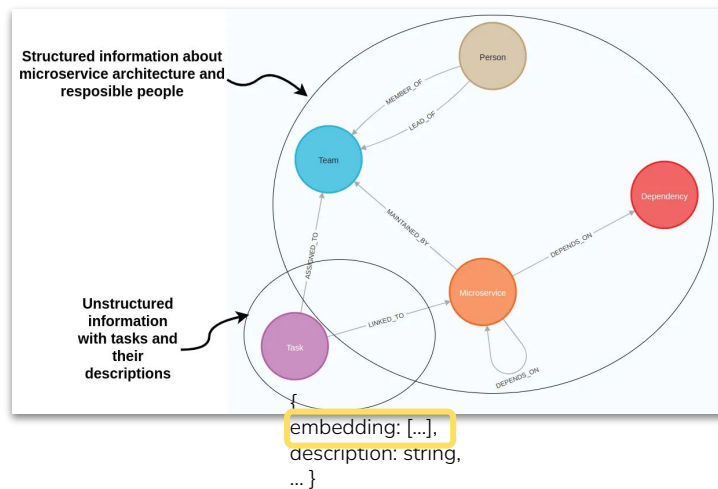
How do KG improve RAG?

Enabling context augmentation

<https://bratanic-tomaz.medium.com/using-a-knowledge-graph-to-implement-a-devops-rag-application-b6ba24831b16>



<https://neo4j.com/developer-blog/genai-app-how-to-build/>



How do KG improve RAG?



- Enabling **fine-grained access control**
- Combining vector + graph search (explicit semantics)
- and more...



And now... a bit of code?