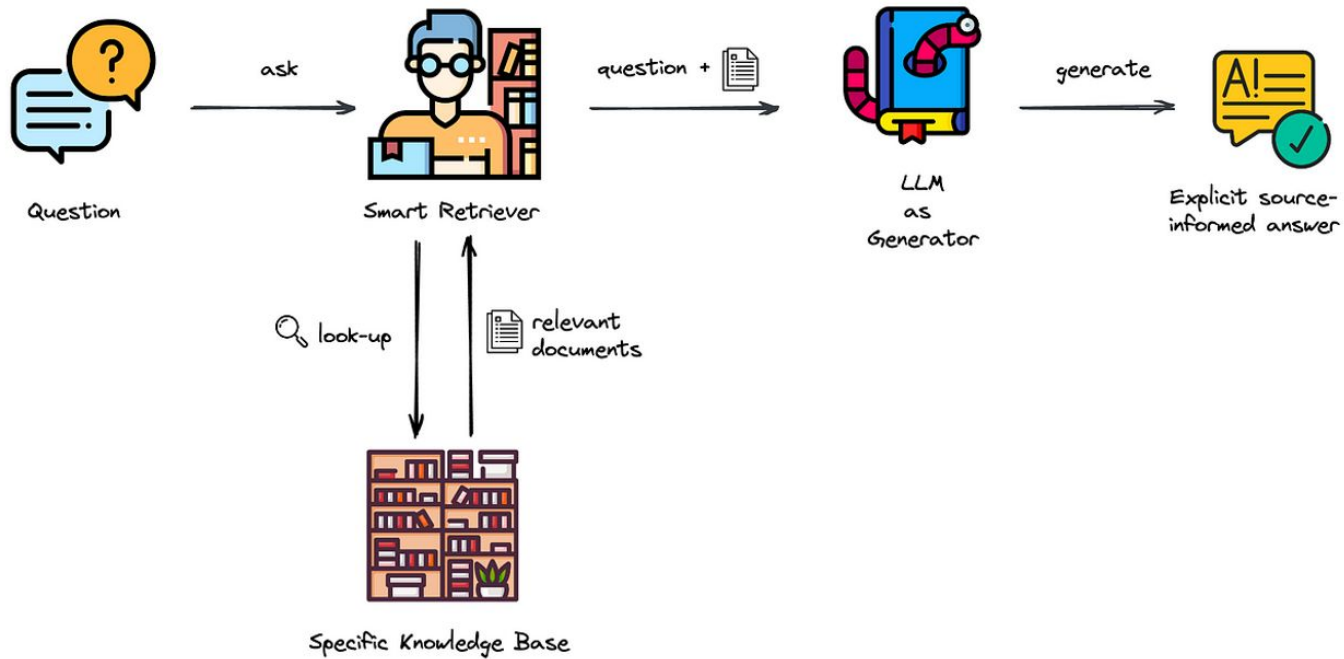# Visualizating GraphRAG

Kevin Wang and Raymond Liu
Information Visualization (2025 - Winter Term 1)
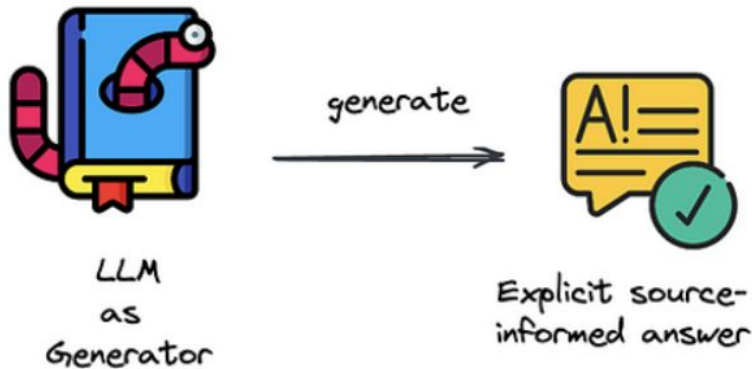
RAG:

connecting LLMs with an external knowledge base

What is RAG?

Why RAG?

generate

LLM as Generator

Explicit source-informed answer

Do lab bonus marks carry over to the overall grade?

Lab bonus marks carry over to the overall grade. The labs are worth 20%. If you get 22 out of 20, the extra 2% goes to your overall grade in the course. This does not apply to quiz questions (iClicker, Canvas, Live PrairieLearn). The maximum you can get on that component is 10%.

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2024_WT1_COSC_304_001_Lawre...
p. 2

Two main goals: *explicit* and *implicit*

Explicit:
Improving answers

Implicit:
Explaining where information came from

How can RAG explain?
RAG can help **identify** related information/documents, using semantic similarity!

Why not RAG?

Because RAG represents documents as a flat list, it struggles to:

synthesize and **reason** about information
across disparate documents

holistically **summarize** and **understand**
concepts over large data collections

GraphRAG:
what if we represent knowledge as a graph, instead of a flat list of documents?

Developed by Microsoft!

GraphRAG

Training

Breaks input corpus apart into
meaningful **chunks**

Use hierarchical clustering to create a
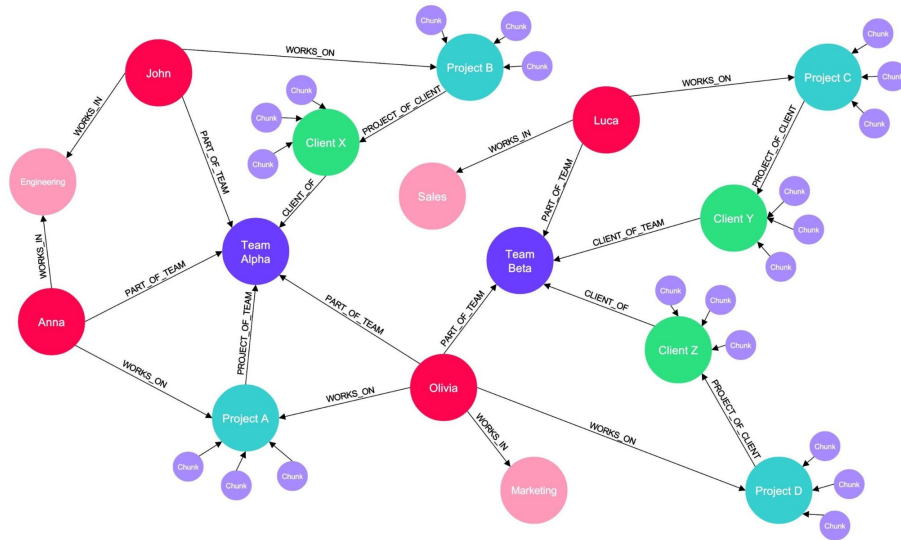**graph structure** from the different
chunks

Query

at various different levels of scale:

global (summarize from community information)
local (fan out from a point in the graph)
DRIFT (fan out from a point in the graph, but include community information)

A quick example

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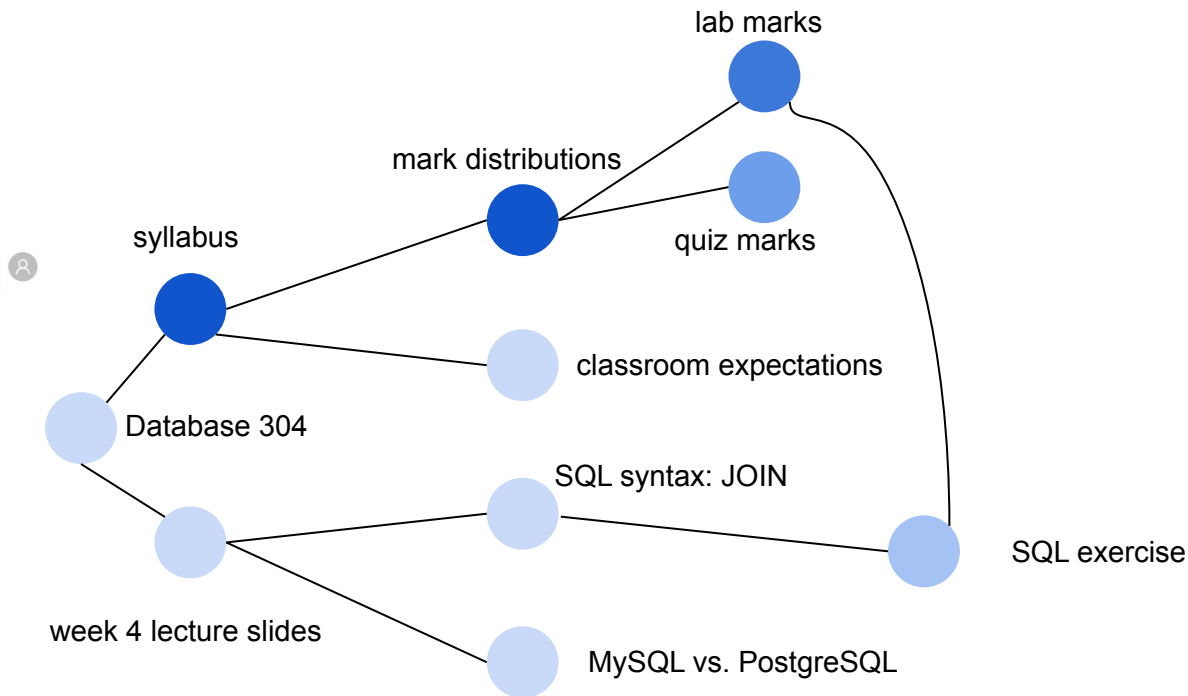
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lab marks

mark distributions

syllabus

quiz marks

classroom expectations

Database 304

SQL syntax: JOIN

SQL exercise

week 4 lecture slides

MySQL vs. PostgreSQL

Why visualize GraphRAG?

Many situations where an LLM is connected to a knowledge base!

Education: highlight relevant portions of the textbook/course materials for students, and how different sections are connected

Search engines: indicate the important links used in search summaries

GraphRAG's goal: for users to **query** a knowledge base

Our goal: for users to **analyze** the knowledge base
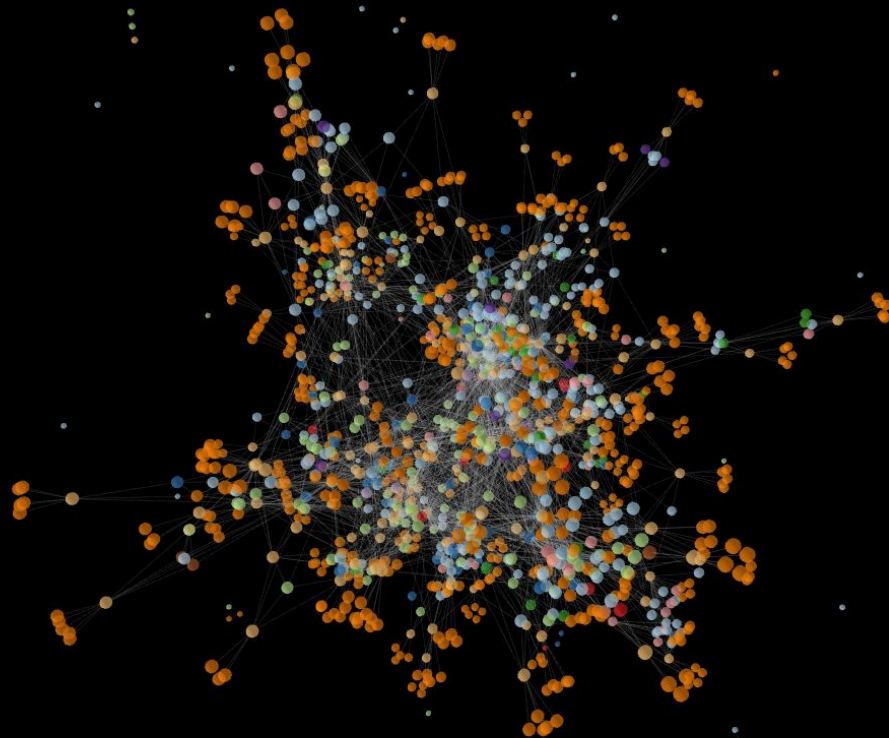
(querying is still a secondary goal!)

Current system: lacking in both function and form

Thank you!