

Team Emerald

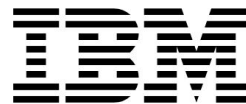
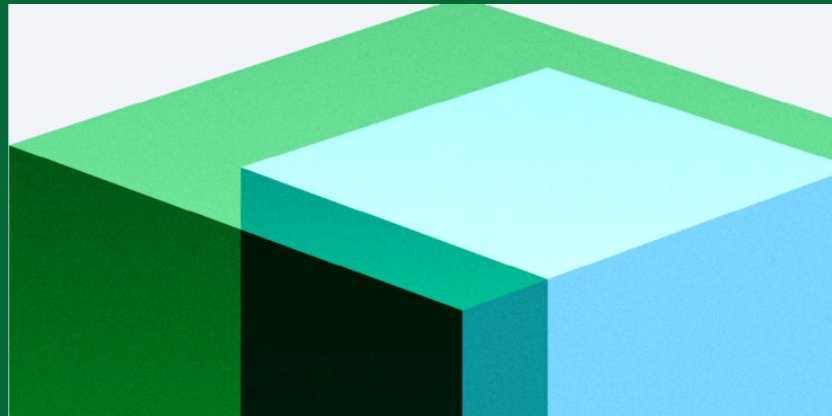
Generating Knowledge Graphs with IBM Granite

Lablabai: Generative AI Hackathon
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IBM Granite Models

- **Granite-3-8b-instruct**
 - Keyword/Theme and Relationship extraction from user documents
- **Granite-34b-code-instruct**
 - Cypher code generation
 - Cypher code fixes



Program Flow

Document Processing

Docling

User upload document(s) into program frontend. Document processing and chunking handled by Docling.

Theme/Relationship Extraction

Granite-3-8b-instruct

IBM Granite Instruct model extracts meaningful keywords, themes and relationships from the document.

Cypher code generation

Granite-34b-code-instruct

IBM Granite Code Instruct model is first called to generate cypher query to create node/edge relationships based on extracted information. Then called again to fix any bugs in the first result.

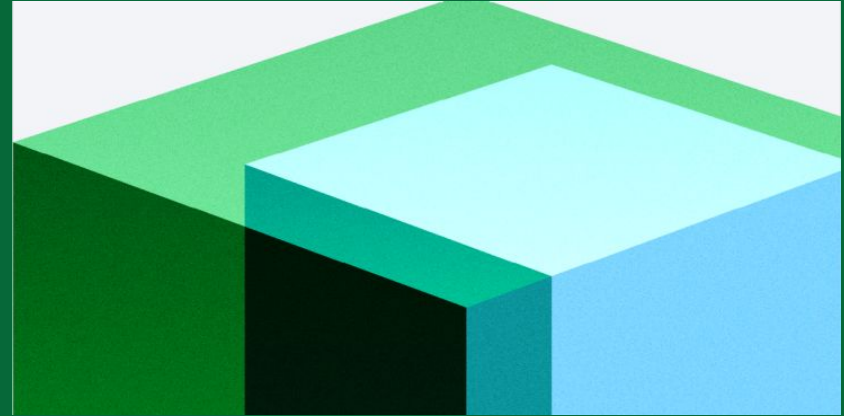
Knowledge Graph DB and Visualization

Neo4j

Knowledge graph is created in Neo4j with Granite Code generated Cypher query.

Summary:

- Successfully extracted themes and relationships using Granite model and generated Cypher queries for knowledge graph generation in Neo4j
- Challenges:
 - Given the non-deterministic nature of LLMs Granite code instruct does not always generate a valid query.
- Future Work:
 - Refining prompts for better/ more predictable and structured outputs from model



Thank you!

- **Project Repo:**
<https://github.com/CS-Edwards/ibm-granite-merald/>
- **Portfolio:** <https://go.hawaii.edu/yYn>
- **Contact Me:** cedward2@hawaii.edu

