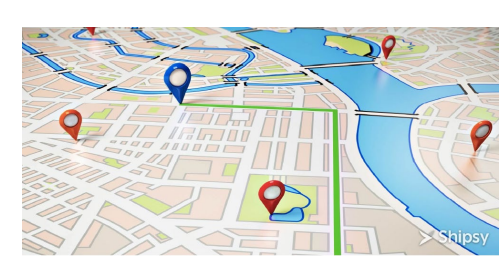


SpatialBenchRAG

A Multimodal GeographiesI, Multilingual Benchmark for KG-grounded RAG over Diverse

Andreea Iana (Data and Web Science Group)

Many everyday tasks depend on **spatial data**



Route planning



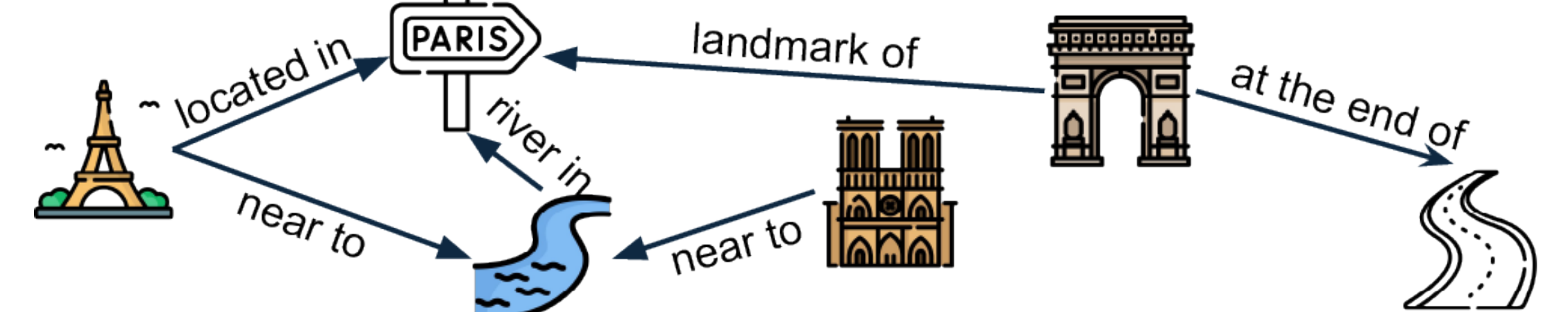
Smart cities



Disaster response



Knowledge Graphs (KGs): (spatial) entities + relationships

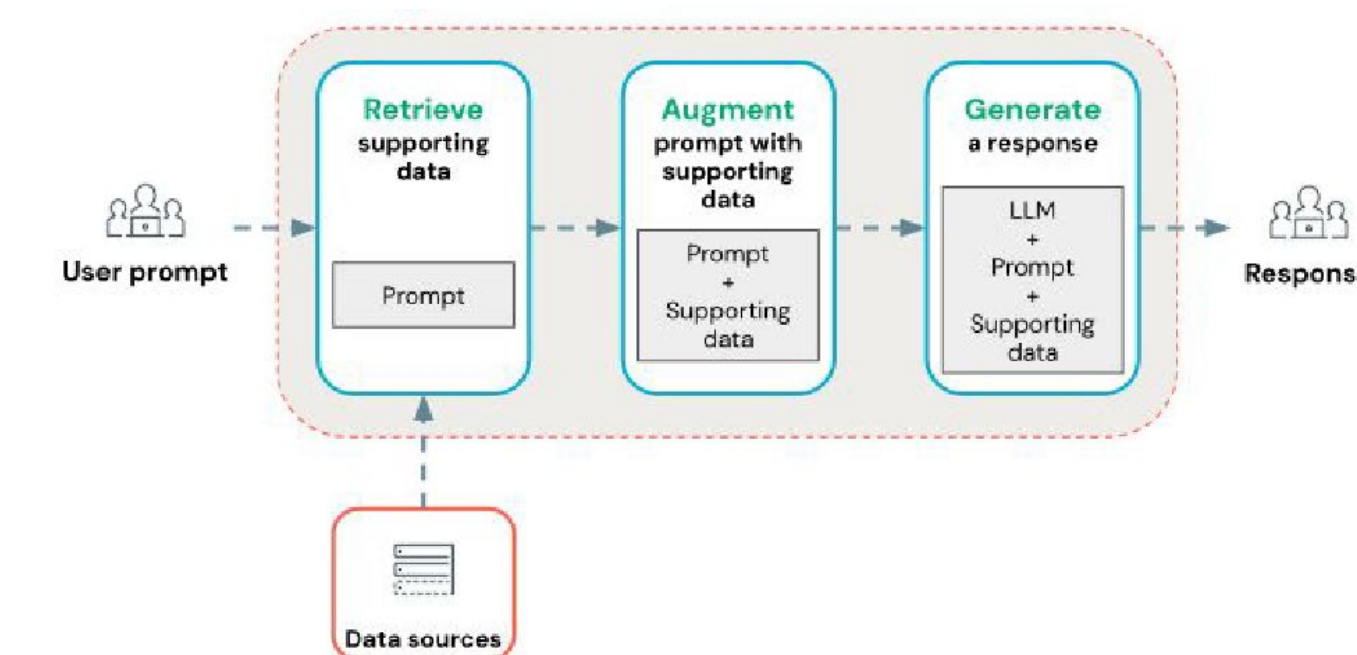


Large Language Models (LLMs)

“Show me a scenic walking route from the Wasserturm to a cozy café near Luisenpark.”



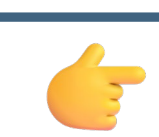
Retrieval-Augmented Generation (RAG)



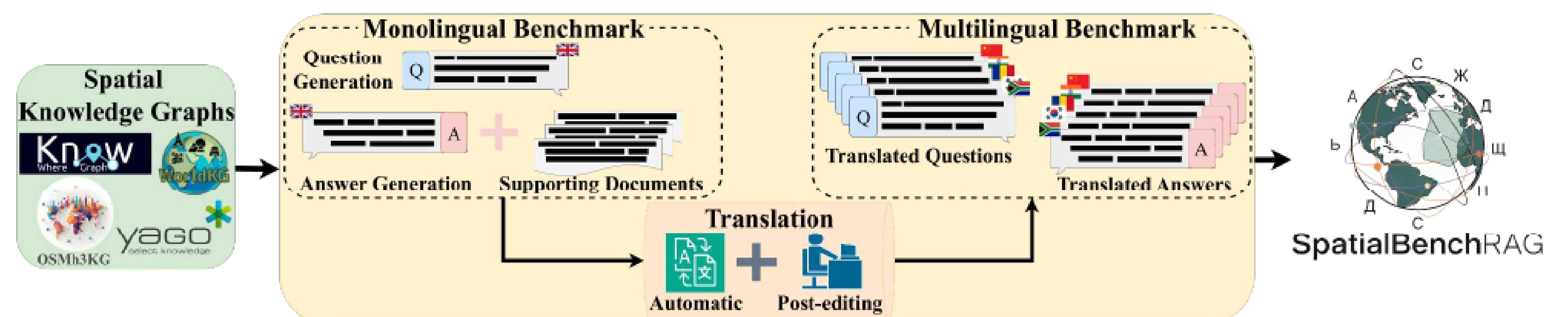
good at **language understanding**



bad at **spatial reasoning** (e.g., near)



We need standardized ways to evaluate RAG systems that use spatial KGs



- Data sources:** public spatial KGs as backbone
- Geographic coverage:** narrow-to-global coverage
- Multi-parallel:** English + 5 other diverse languages

- Task diversity:** spatial QA, reasoning, temporal changes detection, visual queries
- Evaluation:** retrieval accuracy, factual grounding, fluency, multilingual generalization



Rigorous evaluation & reproducible development of context-aware geospatial AI

Open Source

- » Open-source benchmark (dataset + metadata)
- » Free access for research and non-commercial purposes
- » Code publicly available & version-controlled



Hugging Face



CC BY-NC 4.0



GitHub

Use Cases

- » geo-aware conversational assistants
- » spatial fact-checking
- » disaster response technologies

Accelerate progress towards more inclusive, geographically grounded AI systems