Meta-Path Retrieval and Storage

→ How do we compute and store all meta-paths?

Meta-path: sequence of nodes and edge labels
Intuition: Use meta-paths as summaries

- Precompute meta-paths on the entire graph via the graph schema
- Discover meta-path instances on-demand to create a structural value

Explanation and Summary

→ How do we explain and summarize the Knowledge Graph given the acquired knowledge?

- Break down the score and explain how it is composed for specific comparison scenarios
- Combine the domain value $\rho(P)$ and structural value $s(P)$ into a combined similarity score:

$$\sigma(Q_1, Q_2) = \sum_{P \in \text{mp}(Q_1, Q_2)} s(P) \cdot \rho(P)$$

Active User Preference Learning

→ How do we learn the domain knowledge?

- User preferences modelled as Gaussian Processes
- Select $k$ meta-paths with highest trade-off between high uncertainty and diversity
- Retrieve domain values for paths by presenting meta-path batches and asking for ratings:

Representation Learning on Meta-Paths

→ How do we learn a representation for meta-paths?

- Embed meta-paths as vectors using neural networks based on node2vec and paragraph2vec
- Improve embedding when discovering new meta-paths

Interactive Explanation and Exploration of Large Knowledge Graphs

Input: Domain Knowledge
Output: Similarity Measure

How can a domain expert interactively explore large knowledge graphs?