Using Knowledge Graphs for Long-Tail Keyword Query Recommendation in Video Search

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Background & Objectives

- Background: Most current recommendation algorithms are based on the Heterogeneous Information Network (HIN). HIN extracts semantic and structural information using meta-paths, which are manually specified. (VLDB11, WWW19)
- Objectives: Develop a meta-path automatic searching framework to enhance recommendation performance.

Methodology

- RMS: Reinforcement Learning (RL)-based Meta-path Selection Framework.
  - State: The encoding of current meta-path set.
  - Action: A relation in current HIN.
  - Policy: Decision model based on Multi-Layer Perceptron.
  - Reward: The performance improvement after using new meta-path set.

- HRec: A meta-path-based recommendation model
  - Apply HAN [WWW19] in recommendation tasks.
  - Apply Neighbor Sampling during training to prevent out of memory.

Experiments

- Comparison of RMS and Baselines (Random and Greedy)
  - Integrate RMS into existing meta-path-based recommenders (HERec, MRec).
  - Results show RMS can always find better meta-paths than baseline methods.

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<th>Model</th>
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<th>HR3</th>
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Comparison of RMS-HRec and existing recommendation models.

- RMS-HRec outperforms all the existing methods.

Current Work

- We are now constructing a HIN for movie data and using the latest HIN data cleaning methods [IJCAI’19] to obtain a qualified movie HIN.
- Next, we will use RMS-HRec in this HIN.

References