2020-2021学期总结

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总览

- 日常学习
- 复现工作
- 在校项目
- 未来工作

日常学习

- 研究生课程：12/60 课时/周课时
- 论文阅读：知识图谱方向（共计~112篇）

Topic: count

Embedding-based: 30
Knowledge alignment: 9
PTM: 7
Open World Assumption: 6
Temporal: 12
Knowledge Base: 6
Path-based: 10
Commonsense: 3
rule mining: 9
Sparsity: 6
Auxiliary: 8
Survey: 6

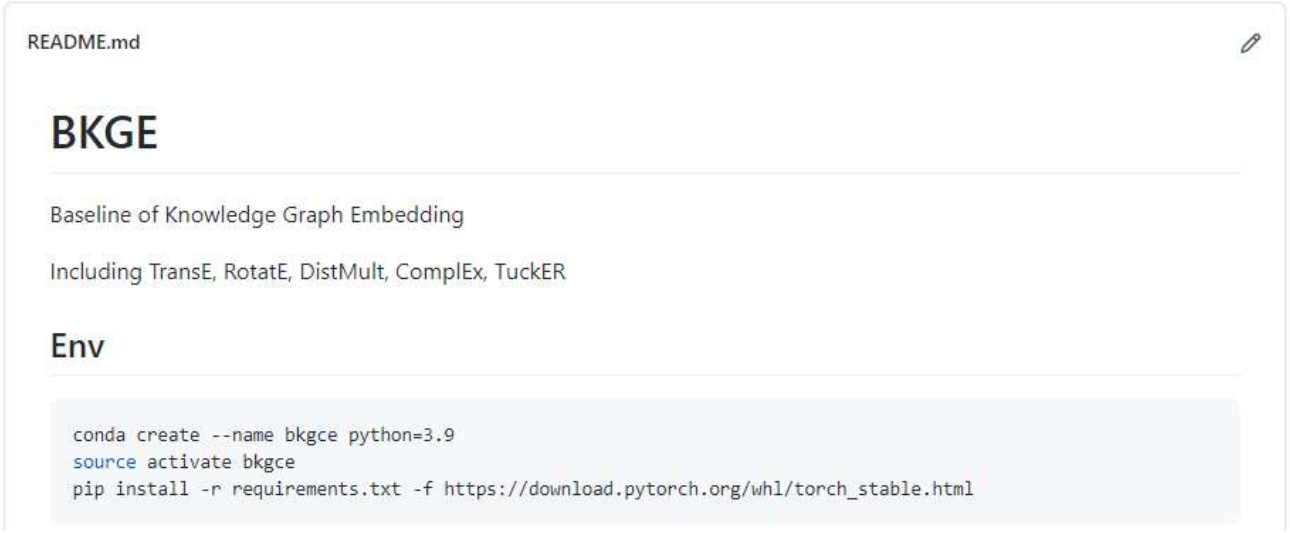
复现工作

BKGE

https://github.com/yuto3o/BKGE

Baseline of knowledge Embedding, including TransE, RotatE, DistMult, ComplEx, ConvE and so on.

　将绝大多数近期embedding方案复现至论文，早期工作有所超出。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BKGE

Baseline of Knowledge Graph Embedding

Including TransE, RotatE, DistMult, ComplEx, TuckER

Env

```
conda create --name bkgce python=3.9
source activate bkgce
pip install -r requirements.txt -f https://download.pytorch.org/whl/torch_stable.html
```

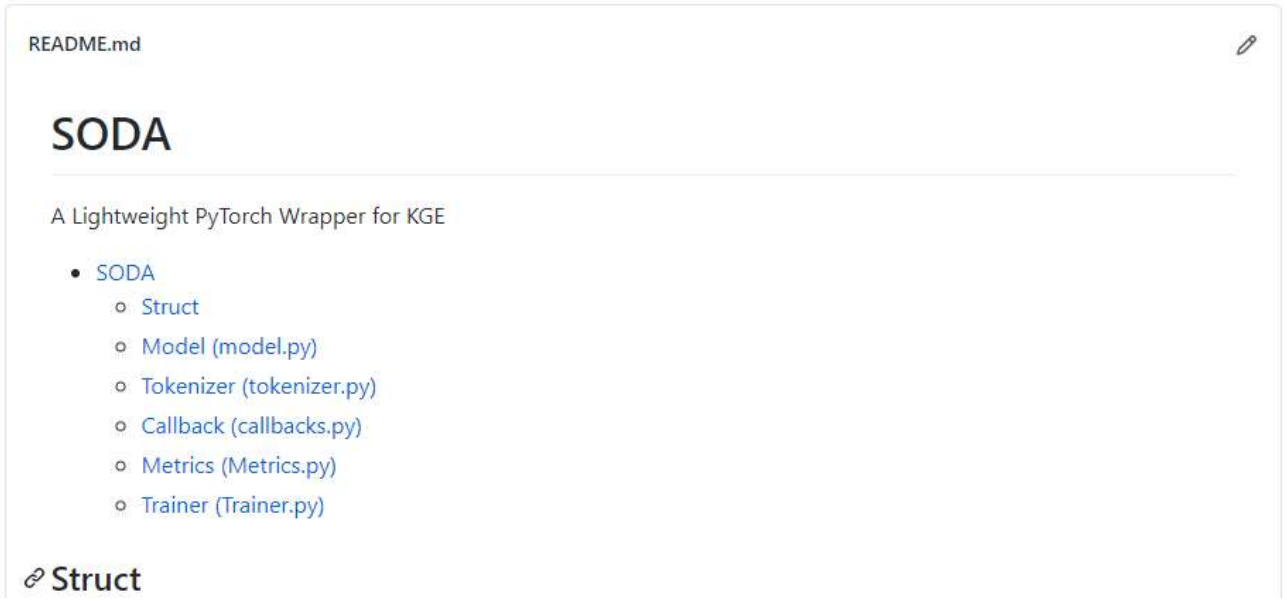
复现工作

SODA

https://github.com/yuto3o/soda

A Lightweight PyTorch Wrapper for KGE

Transformer，KnowledgeGraphEmbedding等几个常用库的抽象超集，Keras-like的训练流程控制。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SODA

A Lightweight PyTorch Wrapper for KGE

- SODA
  - Struct
  - Model (model.py)
  - Tokenizer (tokenizer.py)
  - Callback (callbacks.py)
  - Metrics (Metrics.py)
  - Trainer (Trainer.py)

Struct

在校项目 HuaiweiKG

stage1图谱数据抽取

stage2

Task1 关系分类

Task2 知识图谱补全（推进中）

- 命令-命令、告警-命令、告警-告警图谱补全

  A. Embedding-based Method；

  B. Reasoning-based Method；

- Open-World假设下的算法拓展

针对实体的缺失，利用结构信息、自然语言注释信息为实体提供天然解释。

- 超参数演化算法

增强版grid search，替代人工调参，弱化调参经验。

未来工作

- 中文常识库构建

https://github.com/ICA-KG/CSKB-zh

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Chinese Commonsense Knowledge Base

中文常识图谱知识库项目

时间表

阶段一		**~3周**
	知识库数据整理	1周
	常识库本体构建	2周
阶段二		~4周
	知识库常识挖掘	1-2周
	跨语言常识库知识对齐	2-3周
阶段三		~3周
	众包常识聚合	1周

未来工作

- 一方面围绕常识库的构建工作，展开知识融合 / 实体对齐的相关工作

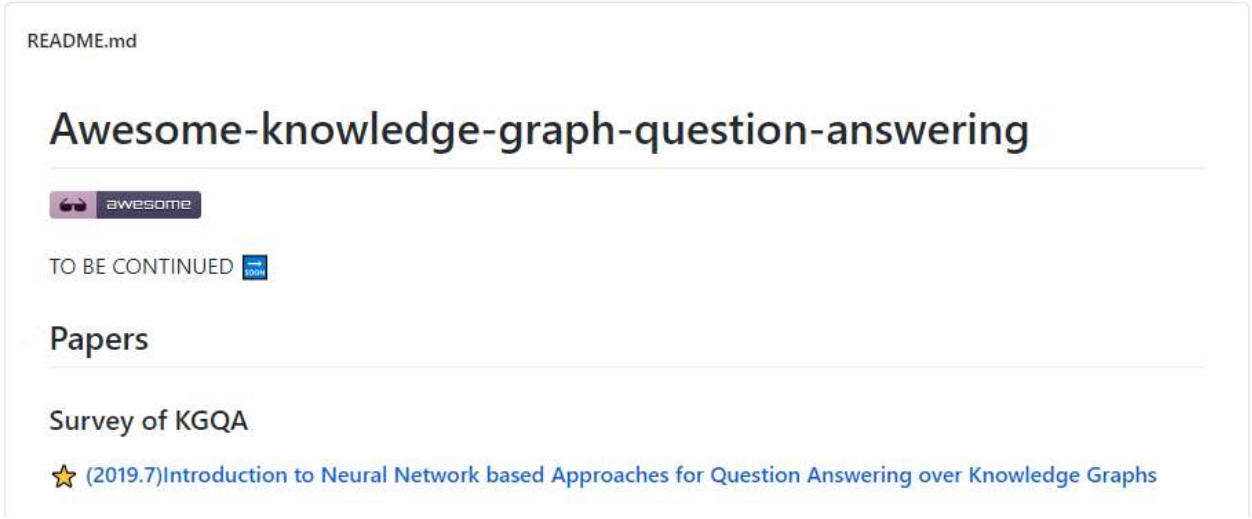
Knowledge Alignment

0. **SURVEY**:A Benchmarking Study of Embedding-based Entity Alignment for Knowledge Graphs. VLDB. 2020
1. **MTransE**: Multilingual Knowledge Graph Embeddings for Cross-lingual Knowledge Alignment. IJCAI. 2017.
2. **IPTransE**: Iterative Entity Alignment via Joint Knowledge Embeddings. IJCAI 2017.
3. **JAPE**: Cross-Lingual Entity Alignment via Joint Attribute-Preserving Embedding. ISWC. 2017.
4. **KDCoE**: Co-training Embeddings of Knowledge Graphs and Entity Descriptions for Cross-lingual Entity Alignment. IJCAI. 2018.
5. **BootEA**: Bootstrapping Entity Alignment with Knowledge Graph Embedding. IJCAI. 2018.
6. **GCN-Align**: Cross-lingual Knowledge Graph Alignment via Graph Convolutional Networks. EMNLP. 2018.
7. Joint Representation Learning of Cross-lingual Words and Entities via Attentive Distant Supervision. EMNLP. 2018.
8. **AttrE**: Entity Alignment between Knowledge Graphs Using Attribute Embeddings. AAAI. 2019.
9. **HopGCN**: Cross-lingual Knowledge Graph Alignment via Graph Matching Neural Network. ACL. 2019
10. **IMUSE**: Unsupervised Entity Alignment Using Attribute Triples and Relation Triples. DASFAA. 2019.
11. **SEA**: Semi-Supervised Entity Alignment via Knowledge Graph Embedding with Awareness of Degree Difference. WWW. 2019.

未来工作

- 另一方面，展开稀疏知识图谱补全、图谱补全可解释性相关学习和探讨，并尝试运用于常识库以及相关稀疏知识图谱的精化。

- 此外，针对以上科研路线，熟悉一项知识图谱相关的下游子任务，暂定为KGQA。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Awesome-knowledge-graph-question-answering

awesome

TO BE CONTINUED

Papers

Survey of KGQA

(2019.7)Introduction to Neural Network based Approaches for Question Answering over Knowledge Graphs

Thanks