Jiaxin Wang

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Education

Xi'an Jiaotong University (XJTU) *Xi'an, China*

Ph.D. Student in Computer Science and Technology *Sep. 2020 - Present*

- **Research Interest:** Natural Language Processing, Few-Shot Learning, Knowledge Graphs
- Advisor: Prof. Jun Liu

Northwestern Polytechnical University (NWPU) *Xi'an, China*

M.Eng. in Communication and Information Systems *Sep. 2017 - Jun. 2020*

- Advisor: Prof. Ruonan Zhang

Northwestern Polytechnical University (NWPU) *Xi'an, China*

B.Eng. in Electronic Science and Technology *Sep. 2013 - Jun. 2017*

Research Experience

Research 1: Few-Shot Learning

Xi'an Jiaotong University *Sep. 2020 – Present*

- Deep learning has shown great success in a variety of tasks with large amounts of labeled data. However, people learning new concepts can often generalize successfully from just few single examples. **This motivates us to do some studies on few-shot learning, which denotes to learn a new concept from one or few single labeled examples.**
- We propose an innovative joint framework with heterogeneous graph named TGIN for few-shot relational triplet extraction. Also, we devise a translation-based graph aggregation and update method to improve the robustness of the model in a few-shot setting.

Research 2: Open-World Machine learning

Xi'an Jiaotong University *Nov. 2021 – Present*

- Traditional machine learning, follows the assumptions of closed-world learning, i.e., for each testing class, a training class is available. However, such machine learning models fail to identify the unseen classes, which were not available during training. **Open-world machine learning is a novel technique to deal with unseen classes.**
- We develop a novel prompt-based framework, MatchPrompt, which enables the model to learn clustering novel relational instances. To our best knowledge, this is the first work to introduce a prompt-based framework for unlabeled clustering.

Research 2: Information Extraction

Xi'an Jiaotong University *Sep. 2020 – Present*

- Information extraction extracts facts from unstructured text, mainly including entity recognition, relation extraction, event extraction, etc. It is one of the most essential technology for knowledge graph construction. In our previous research, we mainly focus on relations.
- **Few-shot relation triple extraction[2]:** we build an end-to-end model to extract entities and their relations in a few-shot setting. Extensive experiments on three public datasets suggested that our model achieves a significant improvement of 2.34%–10.74% in terms of accuracy for this task.
- **Open relation discovery[1]:** We realize novel relation discovery with efficient knowledge transfer from only a few predefined relational instances as well as mine the specific meanings for cluster interpretability.
- **Document-Level Relation Extraction[3]:** we propose a novel double-graph framework for this task and introduce a translation-based graph updating strategy to enhance the coreference and logical reasoning skills of our model.

Publications

[1] *MatchPrompt: Prompt-based Open Relation Extraction with Semantic Consistency Guided Clustering.* **Jiaxin Wang**, Lingling Zhang, Jun Liu, Xi Liang, Yujie Zhong, Yaqiang Wu. In *Proceedings of Empirical*

Methods in Natural Language Processing (EMNLP), 2022.

[2] *TGIN: Translation-Based Graph Inference Network for Few-Shot Relational Triplet Extraction.* **Jiaxin Wang**, Lingling Zhang, Jun Liu, Kunming Ma, Wenjun Wu, Xiang Zhao, Yaqiang Wu, Yi Huang. *IEEE Transactions on Neural Networks and Learning Systems (TNNLS),* 2022.

[3] *TDGI: Translation-Guided Double-Graph Inference for Document-Level Relation Extraction.* Lingling Zhang, Yujie Zhong, Qinghua Zheng, Jun Liu, Qianying Wang, **Jiaxin Wang**, Xiaojun Chang. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI),* Under Review.

[4] *DisAVR: Disentangled Adaptive Visual Reasoning Network for Diagram Question Answering.* Yaxian Wang, Bifan Wei, Jun Liu, Lingling Zhang, **Jiaxin Wang**, Qianying Wang. *IEEE Transactions on Image Processing (TIP),* Under Review.

Project and Industry Experience

Key Technologies and Systems of Hybrid Enhanced Online Education

Participant, *National Key Research and Development Program of China* *Sep. 2020 – Present*

- Responsible for text fragmentation knowledge mining, fusion and application. Meanwhile, guide junior students and coordinate project development.

Interpretable Reasoning Method of Cross-Media Intelligent Question Answering

Participant, *National Natural Science Foundation of China* *Sep. 2020 – Present*

- Responsible for information extraction, reasoning and fusion.

Next Generation Bluetooth Communication Protocol

Research Inter, *2012 Lab, Huawei Technologies Co., Ltd* *Feb. 2019 – Jun. 2019*

- Dedicated to developing and promoting international Bluetooth standards for smart wearable devices.

Service

Reviewer EMNLP 2022, ACL 2022, SIGKDD 2022, AAAI 2022, AAAI 2023, IEEE APCC 2019, IEEE ICCC 2019, IoTaaS 2018, Transactions on Information Systems, Data Science and Engineering, Journal of Communications and Networks

Awards and Honors

Oct. 2022	The First Academic Scholarship of Xi'an Jiaotong University, every academic year.
Nov. 2022	Excellent Postgraduate of Xi'an Jiaotong University.
May. 2020	Outstanding Graduates of Northwestern Polytechnical University (<5%).
Oct. 2019	The First Prize Scholarship of Northwestern Polytechnical University.
Dec. 2018	National Scholarship for Postgraduates (<1%).
Before 2018	The First Prize Scholarship of Northwestern Polytechnical University, Advanced worker in Peer Counseling and Excellent Student Cadre, etc.

Miscellaneous

Skills	Python, Pytorch, Matlab, Latex, Adobe Photoshop
Sports	Badminton, Jogging
Arts	Poetry, Writing
Others	Photography, Detective fiction