

QIAN LIU(刘乾)

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🎓 EDUCATION

Beihang University 2017.9 – 2022.6

Ph.D. in Computer Science and Engineering ♣ Joint Program with Microsoft Research Asia

Ph.D. Supervisor: Qinpeng Zhao ♣ Co-advisor: Jian-Guang Lou

Beihang University 2013.9 – 2017.6

B.S. in Computer Science and Technology, Ranking 7 / 233

👤 EXPERIENCE

Sea AI Lab, Singapore 2022.7 – Present

Research Scientist at *Natural Language Processing* Group ◇ Leader: Shuicheng Yan

Microsoft Research Asia, China 2018.2 – 2022.6

Research Intern at *Data, Knowledge and Intelligence* Group ◇ Leader: Jian-Guang Lou & Bei Chen

Microsoft Research Asia, China 2016.7 – 2017.8

Research Intern at *Big Data Mining* Group ◇ Leader: Zaiqing Nie & Yohn Cao

💡 RESEARCH INTERESTS

- **Semantic Parsing:** *Focusing on building generalizable, interactive and interpretable text-to-SQL systems.*
- **Reinforcement Learning:** *Focusing on applying reinforcement learning on various NLP applications.*

📌 SELECTED PROJECTS

Compositional Generalization 2020.2 – Present

Compositional generalization is a basic but essential intellectual capability of human beings. However, existing neural models have been proven to be extremely deficient in such a capability. To tackle it, we propose a novel memory-augmented neural model. Specifically, our model is the first neural model to pass all compositional challenges addressed by previous works without extra resources. As one of the main contributor, I contribute the original idea, the model structure and the training protocol.

Conversational Text-to-SQL 2018.2 – Present

This ongoing research project is born out of demand from Microsoft products, which aims to develop a conversational text-to-SQL system to help common users to analyze tabular data through natural language conversations. To improve the accuracy of our system, we explore various context modeling techniques (query rewriting, turn-level encoding, tree-based copy mechanism). As the owner of this project, I am responsible for algorithm design, system implementation, and working on experiments.

📖 SELECTED PUBLICATIONS

- Jianan Zhao, Meng Qu, Chaozhuo Li, Hao Yan, **Qian Liu**, Rui Li, Xing Xie, Jian Tang, [Learning on Large-scale Text-attributed Graphs via Variational Inference](#). In *International Conference on Learning Representations 2023 (ICLR-2023)*, **Oral**
- Bill Yuchen Lin, Chengsong Huang, **Qian Liu**, Wenda Gu, Sam Sommerer, Xiang Ren, [On Grounded Planning for Embodied Tasks with Language Models](#). In *37th AAAI Conference on Artificial Intelligence (AAAI-2023)*
- Qi Shi, **Qian Liu**, Bei Chen, Yu Zhang, Ting Liu, Jian-Guang Lou, [LEMON: Language-Based Environment Manipulation via Execution-Guided Pre-training](#). In *Findings of the Association for Computational Linguistics: EMNLP 2022 (EMNLP-2022 Findings)*

- Xinyu Pi*, **Qian Liu***, Bei Chen, Morteza Ziyadi, Zeqi Lin, Yan Gao, Qiang Fu, Jian-Guang Lou, Weizhu Chen, [Reasoning Like Program Executors](#). In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2022, **Oral**)
- **Qian Liu**, Bei Chen, Jiaqi Guo, Morteza Ziyadi, Zeqi Lin, Weizhu Chen, Jian-Guang Lou, [TAPEX: Table Pre-training via Learning a Neural SQL Executor](#). In *International Conference on Learning Representations 2022* (ICLR-2022, **Highest Rating in the 1st Round**)
- Jiaqi Guo, Ziliang Si, Yu Wang, **Qian Liu**, Ming Fan, Jian-Guang Lou, Zijiang Yang, Ting Liu, [CHASE: A Large-Scale and Pragmatic Chinese Dataset for Cross-Database Context-Dependent Text-to-SQL](#). In *Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics* (ACL-2021, **Oral**)
- **Qian Liu***, Dejian Yang*, Jiahui Zhang*, Jiaqi Guo, Bin Zhou, Jian-Guang Lou, [Awakening Latent Grounding from Pretrained Language Models for Semantic Parsing](#). In *Findings of the Association for Computational Linguistics: ACL 2021* (ACL-2021 Findings, * = equal contribution)
- Shuang Chen*, **Qian Liu***, Zhiwei Yu*, Chin-Yew Lin, Jian-Guang Lou, Feng Jiang, ReTraCk: A Flexible and Efficient Framework for Knowledge Base Question Answering. In *Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics: System Demonstrations* (ACL-2021 Demo, * = equal contribution)
- Yuntao Li, Bei Chen, **Qian Liu**, Yan Gao, Jian-Guang Lou, Yan Zhang, Dongmei Zhang, Keep the Structure: A Latent Shift-Reduce Parser for Semantic Parsing. In *30th International Joint Conference on Artificial Intelligence* (IJCAI-2021)
- **Qian Liu***, Shengnan An*, Jian-Guang Lou, Bei Chen, Zeqi Lin, Yan Gao, Bin Zhou, Nanning Zheng, Dongmei Zhang, [Compositional Generalization by Learning Analytical Expressions](#). In *Advances in Neural Information Processing Systems 34* (NeurIPS-2020, **Spotlight**, * = equal contribution)
- **Qian Liu**, Bei Chen, Jian-Guang Lou, Bin Zhou and Dongmei Zhang, [Incomplete Utterance Rewriting as Semantic Segmentation](#). In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2020)
- Jiaqi Guo, **Qian Liu**, Jian-Guang Lou, Zhenwen Li, Xueqing Liu, Tao Xie and Ting Liu, [Benchmarking Meaning Representations in Neural Semantic Parsing](#). In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2020)
- Yuntao Li, Bei Chen, **Qian Liu**, Yan Gao, Jian-Guang Lou, Yan Zhang and Dongmei Zhang, [“What Do You Mean by That?” A Parser-Independent Interactive Approach for Enhancing Text-to-SQL](#). In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2020)
- **Qian Liu**, Bei Chen, Jiaqi Guo, Jian-Guang Lou, Bin Zhou and Dongmei Zhang, [How Far are We from Effective Context Modeling? An Exploratory Study on Semantic Parsing in Context](#). In *29th International Joint Conference on Artificial Intelligence* (IJCAI-2020)
- **Qian Liu**, Yihong Chen, Bei Chen, Jian-Guang Lou, Zixuan Chen, Bin Zhou, Dongmei Zhang, [You Impress Me: Dialogue Generation via Mutual Persona Perception](#). In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics* (ACL-2020)
- **Qian Liu**, Bei Chen, Haoyan Liu, Lei Fang, Jian-Guang Lou, Bin Zhou, Dongmei Zhang, [A Split-and-Recombine Approach for Follow-up Query Analysis](#). In *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2019)
- **Qian Liu**, Bei Chen, Jian-Guang Lou, Ge Jin, Dongmei Zhang, [FANDA: A Novel Approach to Perform Follow-up Query Analysis](#). In *33th AAAI Conference on Artificial Intelligence* (AAAI-2019)

⚙️ SKILLS

- Programming Languages: Python > C# > JavaScript > HTML/CSS = C++
- Deep Learning Tools: FairSeq > AllenNLP = PyTorch > Transformers > Tensorflow

♥️ HONORS & AWARDS

Baidu Scholarship Top 20 Worldwide	2020
Graduate Student National Scholarship	2019, 2021
Beijing Outstanding Graduate Awards	2017