Qiyu Wu

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Keywords: Natural Language Processing; Multi-modal Embeddings; LLMs/MLLMs.

Summary

Ph.D. specializing in NLP, focusing on **learning text embeddings/representation** [C8, C7, C5, C4, J1, C3] and **fine-grained LLMs/VLMs** [C12, M1, C11]. I also collaborate on **entity representation** [C6] and **reinforcement learning** [J2] for expanding my scope. These works have been presented at conferences such as ACL, EMNLP, ICLR, NAACL, ICML, etc.

Education

The University of Tokyo, Ph.D. Degree in Information Science & Technology.	2021.10 – 2024.09
• Ph.D. at Tsuruoka Lab; JSPS DC2 Fellowship; JST SPRING Fellowship.	
Peking University, M.Sc. Degree in Computer Software & Theory.	2018.09 – 2021.07
Sichuan University, B.Eng. Degree in Computer Science & Technology.	2014.09 – 2018.07

Research Experiences

Research Scientist at Sony, Creative AI Lab — 2025.10 – Present
- Multi-modal pre-training for retrieval; Multi-modal understanding.
- Bi-modal data augmentation for reporting bias in visual-language dataset [M1], work done during the internship in 2023.

Ph.D. at UTokyo, Tsuruoka Lab — 2021.10 – 2024.09
- Word-level preference for LLM-based machine translation [C12]; Word alignment pre-training [C5];
- Cross-lingual text embeddings [C8, C7].

Visiting Student at UC San Diego — 2023.01 – 2023.02
- Generalized diffusion model [C9].

Research Intern at Microsoft — 2020.04 – 2022.02
- Multiple positive examples in sentence embeddings with contrastive learning [C4], work done at STCA.
- Acceleration of language pre-training via better rare word representation [C3], work done at MSR Asia.

R&D Intern at Baidu Research — 2019.10 – 2020.02
- Multi-task transportation prediction [C2]; Route mode recommendation in Baidu Maps.

Publications

∗ **indicates equal contribution;** † **indicates students mentored by me.**

[J2] Yuting Tang, Xin-Qiang Cai, Yao-Xiang Ding, Qiyu Wu, Guoqing Liu, Masashi Sugiyama. "Reinforcement Learning from Bagged Reward", in Transactions on Machine Learning Research *(TMLR)*.

[C12] Qiyu Wu, Masaaki Nagata, Zhongtao Miao, Yoshimasa Tsuruoka. "Word Alignment as Preference for Machine Translation", *(EMNLP 2024, main conference long paper, Oral)*.

[C11] Qiyu Wu, Zilong Wu, Yoshimasa Tsuruoka. "SGA: Scene Graph Alignment for Evaluation of Text-to-Image Generation", *(KDD 2024 Workshop HI-AI)*.

[C10] Yuting Tang, Xin-Qiang Cai, Yao-Xiang Ding, Qiyu Wu, Guoqing Liu, Masashi Sugiyama. "Reinforcement Learning from Bagged Reward", *(ICML 2024 Workshop ARLET)*.

[C9] Guangyi Liu, Yu Wang, Zeyu Feng, Qiyu Wu, Liping Tang, Yuan Gao, Zhen Li, Shuguang Cui, Julian McAuley, Eric P. Xing, Zichao Yang, Zhiting Hu. "Unified Generation, Reconstruction, and Representation: Generalized Diffusion with Adaptive Latent Encoding-Decoding", *in the Forty-first International Conference on Machine Learning. (ICML 2024)*.

[C8] Zhongtao Miao[†], Qiyu Wu, Kaiyan Zhao, Zilong Wu, Yoshimasa Tsuruoka. "Enhancing Cross-lingual Sentence Embedding for Low-resource Languages with Word Alignment", in *the 2022 Conference of the North American Chapter of the Association for Computational Linguistics **(NAACL 2024, findings)***.

[C7] Kaiyan Zhao[†*], Qiyu Wu[*], Xin-Qiang Cai, Yoshimasa Tsuruoka. "Leveraging Multi-lingual Positive Instances in Contrastive Learning to Improve Sentence Embedding", in *the 18th Conference of the European Chapter of the Association for Computational Linguistics **(EACL 2024, main conference long paper)***.

[C6] Shiwen Wu, Qiyu Wu, Honghua Dong, Wen Hua, Xiaofang Zhou. "Blocker and Matcher Can Mutually Benefit: A Co-Learning Framework for Low-Resource Entity Resolution.", *Proc. VLDB Endow. (2024). Will appear at Very Large Databases Conf. **(VLDB 2024, research track paper)***.

[M1] Qiyu Wu, Mengjie Zhao, Yutong He, Lang Huang, Junya Ono, Hiromi Wakaki, Yuki Mitsufuji. "Towards Reporting Bias in Visual-language Datasets: Bi-modal Data Augmentation by Decoupling Object-attribute Association", *preprint (arXiv:2310.01330)*.

[C5] Qiyu Wu, Masaaki Nagata, Yoshimasa Tsuruoka. "WSPAlign: Word Alignment Pre-training via Large-Scale Weakly Supervised Span Prediction", in *the 61st Annual Meeting of the Association for Computational Linguistics **(ACL 2023, main conference long paper)***.

[C4] Qiyu Wu, Chongyang Tao, Tao Shen, Can Xu, Xiubo Geng, Daxin Jiang. "PCL: Peer-Contrastive Learning with Diverse Augmentations for Sentence Embeddings", in *Conference on Empirical Methods in Natural Language Processing **(EMNLP 2022, main conference long paper)***.

[J1] Yutao Xie[†], Qiyu Wu, Wei Chen and Tengjiao Wang. "Stable Contrastive Learning for Self-Supervised Sentence Embeddings With Pseudo-Siamese Mutual Learning", in *IEEE/ACM Transactions on Audio, Speech, and Language Processing **(TASLP)**, vol. 30, pp. 3046-3059, 2022*.

[C3] Qiyu Wu[*], Chen Xing[*], Yatao Li, Guolin Ke, Di He, Tie-Yan Liu. "Taking Notes on the Fly Helps Language Pre-Training", in *the Ninth International Conference on Learning Representations **(ICLR 2021)***.

[C2] Hao Liu[*], Qiyu Wu[*], Fuzhen Zhuang, Xinjiang Lu, Dejing Dou, Hui Xiong. "Community-Aware Multi-Task Transportation Demand Prediction", in *Thirty-Fifth AAAI Conference on Artificial Intelligence **(AAAI 2021)***.

[C1] Dechuan Yang[*], Qiyu Wu[*], Wei Chen, Tengjiao Wang, Zhen Qiu, Di Liu. "Stance Detection with Stance-wise Convolution Network", in the *2022 CCF International Conference on Natural Language Processing and Chinese Computing*.

[J]: Journal paper; [C]: Conference paper; [M]: Manuscript; [N]: Non-refereed.

Advising and Services

Advised Students
- Jongsuk Kim (2025), Intern at Sony, Ph.D. student from KAIST.
- Zhongtao Miao (2023 – 2024), Master student at The University of Tokyo, published [C8, C12].
- Kaiyan Zhao (2022 – 2024), Master student at The University of Tokyo, published [C7].
- Yutao Xie (2020 – 2021), Ph.D. student at Peking University, published [J1].

Teaching Assistant of "Social Implications of Computing" (2019 Summer)

Area Chair of ACL Rolling Review (2025 – Present); Reviewer of ACL Rolling Review, EMNLP, ICLR, NeurIPS, ICML, etc. (2021 – Present)