

QIYU WU

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Keywords: NLP; Text Embeddings; LLMs/VLMs.

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** [C10] 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

- **Ph.D. at UTokyo, Tsuruoka Lab** 2021.10 – 2024.09
Word-level preference for LLM-based machine translation [C12]; Scene graph alignment for text-to-image evaluation [C11];
Word alignment pre-training [C5]; Cross-lingual text embeddings [C8, C7].
- **Research Intern at Sony, Creative AI Lab** 2023.06 – 2023.09
Bi-modal data augmentation for mitigating reporting bias in visual-language dataset [M1].
- **Visiting Student at UC San Diego** 2023.01 – 2023.02
Generalized diffusion model [C9].
- **Research Intern at Microsoft** 2021.10 – 2022.02
Multiple positive examples in sentence embeddings with contrastive learning [C4].
- **Research Intern at Microsoft Research, Asia** 2020.04 – 2021.06
Acceleration of language pre-training via better rare word representation [C3].
- **R&D Intern at Baidu Research** 2019.10 – 2020.02
Multi-task transportation prediction [C2]; Route mode recommendation in Baidu Maps.

RESEARCH PAPERS

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

[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.

MENTORING AND SERVICES

- Mentoring:
 - Zhongtao Miao, Ph.D. student at The University of Tokyo, published [C8, C12]. 2023 – 2024
 - Kaiyan Zhao, Ph.D. student at The University of Tokyo, published [C7]. 2022 – 2024
 - Yutao Xie, Ph.D. student at Peking University, published [J1]. 2020 – 2021
- Teaching Assistant of “Social Implications of Computing” at Peking University. 2019 Summer
- Reviewer of ACL Rolling Review, EMNLP, ICLR, NeurIPS, ICML, etc. 2021 – Present