Language Technologies Institute - Carnegie Mellon University
PA 15213
danqingw@andrew.cmu.edu
dqwang122.github.io
dqwang122

Danqing Wang

Research Interest: Interested in various generation tasks, including large language models and biological sequences. Devoted to helping the machine generate new content that benefits human life. Mainly focus on (but not limited to):

- Reasoning and Planning in Large Language Models: Multi-agent Collaboration, Alignment, etc.
- AI for Science: Peptide Design, Antibody Discovery, etc.

Github:*https://github.com/dqwang122*
Scholar: *Google Scholar*, *Semantic Scholar*

Education

2024 – Current **PhD in Language Technologies Institute**, *Carnegie Mellon University*
Advisor: Prof. Lei Li

2022 – 2023 **PhD in Computer Science**, *UC, Santa Barbara*
Advisor: Prof. Lei Li

2018 – 2021 **Master in Computer Science**, *Fudan Univerisity*
Advisor: Prof. Xipeng Qiu and Prof. Xuanjing Huang

2014 – 2018 **Bachelor in Computer Science and Technology**, *Fudan Univerisity*
Ranking: Top 10%

Experience

2023.6 – 2024.1 **Research Scientist Intern**, *Meta AI (FAIR)*
Advisor: Yuandong Tian

2020.4 – 2022.8 **Research Scientist**, *ByteDance Research (AI Lab)*
Advisor: Jiaze Chen, Hao Zhou, and Lei Li

Main Publications

Large Language Models

Under Submission **Cooperative Strategic Planning Enhances Reasoning Capabilities in Large Language Models**
Danqing Wang, Zhuorui Ye, Fei Fang, Lei Li

Under Submission **ThinkHub: Enhancing Large Language Models with Implicit Policy and Explicit Knowledge**
Danqing Wang, JianXin Ma, Lei Li

Preprint on arXiv **Learning Personalized Alignment for Evaluating Open-ended Text Generation**
Danqing Wang, Kevin Yang, Hanlin Zhu, Xiaomeng Yang, Andrew Cohen, Lei Li, Yuandong Tian

EMNLP 2023 **Learning from Mistakes via Cooperative Study Assistant for Large Language Models**
Danqing Wang, Lei Li

EMNLP 2023 **Instructscore: Towards Explainable Text Generation Evaluation with Automatic Feedback**
Wenda Xu, Danqing Wang, Liangming Pan, Zhenqiao Song, Markus Freitag, William Yang Wang, Lei Li

NeurIPS 2023 **ALGO: Synthesizing Algorithmic Programs with Generated Oracle Verifiers**
Kexun Zhang, Danqing Wang, Jingtao Xia, William Yang Wang, Lei Li

AI for Science

KDD 2024 **Global Human-guided Counterfactual Explanations for Molecular Properties via Reinforcement Learning**
Danqing Wang, Antonis Antoniades*, Kha-Dinh Luong, Edwin Zhang, Mert Kosan, Jiachen Li, William Yang Wang, Ambuj Singh, Lei Li*

ICLR 2023 **On Pre-training Language Model for Antibody**
Danqing Wang, Fei Ye, Hao Zhou

KDD 2023 **Accelerating Antimicrobial Peptide Discovery with Latent Structure**
Danqing Wang, Zeyu Wen, Fei Ye, Lei Li, Hao Zhou

Text Summarization

ACL 2021 Finding **Contrastive Aligned Joint Learning for Multilingual Summarization**
Danqing Wang, Jiaze Chen, Hao Zhou, Xipeng Qiu, Lei Li

ACL 2020 **Heterogeneous Graph Neural Networks for Extractive Document Summarization**
Danqing Wang, Pengfei Liu*, Yining Zheng, Xipeng Qiu and Xuanjing Huang*

ACL 2020 **Extractive Summarization as Text Matching**
Ming Zhong, Pengfei Liu*, Yiran Chen, Danqing Wang, Xipeng Qiu and Xuanjing Huang*

ACL 2019 **Searching for Effective Neural Extractive Summarization: What Works and What's Next**
Ming Zhong, Pengfei Liu*, Danqing Wang, Xipeng Qiu, Xuanjing Huang*

Academic Services

- Program Committee of ICML, ICLR, NeurIPS, ACL, EMNLP, AAAI
- TA for CS190I Deep Learning (Winter 2023) and CS165B Machine Learning (Spring 2023)
- Local Organization Chair of Socal NLP Symposium 2022

Honor

2022 Academic Excellence Fellowship
2021 Shanghai Outstanding Graduates (5% of graduates)
2020 Venustech Scholarship (1% of Fudan students)
2019 Scholarship for Outstanding Students (First Prize)
2017 Fudan's Undergraduate Research Opportunities Program

Bibliography

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[2] Yiran Chen, Pengfei Liu, Ming Zhong, Zi-Yi Dou, Danqing Wang, Xipeng Qiu, and Xuan-Jing Huang. Cdevalsumm: An empirical study of cross-dataset evaluation for neural summarization systems. In *Findings of the Association for Computational Linguistics: EMNLP 2020*, pages 3679–3691, 2020.

[3] Yiran Chen, Zhenqiao Song, Xianze Wu, Danqing Wang, Jingjing Xu, Jiaze Chen, Hao Zhou, and Lei Li. Mtg: A benchmark suite for multilingual text generation. In *Findings of the Association for Computational Linguistics: NAACL 2022*, pages 2508–2527, 2022.

[4] Danqing Wang, Antonis Antoniades, Kha-Dinh Luong, Edwin Zhang, Mert Kosan, Jiachen Li, Ambuj Singh, William Yang Wang, and Lei Li. Global human-guided counterfactual explanations for molecular properties via reinforcement learning. In *Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, KDD '24, page 2991–3000, New York, NY, USA, 2024. Association for Computing Machinery.

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[7] Danqing Wang and Lei Li. Learn from mistakes through cooperative interaction with study assistant. *The 2023 Conference on Empirical Methods in Natural Language Processing (EMNLP) 2023*, 2023.

[8] Danqing Wang, Pengfei Liu, Yining Zheng, Xipeng Qiu, and Xuan-Jing Huang. Heterogeneous graph neural networks for extractive document summarization. In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, pages 6209–6219, 2020.

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[10] Danqing Wang, Zeyu Wen, Fei Ye, Lei Li, and Hao Zhou. Accelerating antimicrobial peptide discovery with latent structure. In *Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, KDD '23, page 2243–2255, New York, NY, USA, 2023. Association for Computing Machinery.

[11] Danqing Wang, Kevin Yang, Hanlin Zhu, Xiaomeng Yang, Andrew Cohen, Lei Li, and Yuandong Tian. Learning personalized story evaluation. *arXiv preprint arXiv:2310.03304*, 2023.

[12] Danqing Wang, Fei YE, and Hao Zhou. On pre-training language model for antibody. In *The Eleventh International Conference on Learning Representations*, 2023.

[13] Wenda Xu, Danqing Wang, Liangming Pan, Zhenqiao Song, Markus Freitag, William Wang, and Lei Li. INSTRUCTSCORE: Towards explainable text generation evaluation with automatic feedback. In Houda Bouamor, Juan Pino, and Kalika Bali, editors, *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing*, pages 5967–5994, Singapore, December 2023. Association for Computational Linguistics.

[14] Kexun Zhang, Danqing Wang, Jingtao Xia, William Yang Wang, and Lei Li. Algo: synthesizing algorithmic programs with llm-generated oracle verifiers. In *Proceedings of the 37th International Conference on Neural Information Processing Systems*, pages 54769–54784, 2023.

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[16] Ming Zhong, Pengfei Liu, Danqing Wang, Xipeng Qiu, and Xuan-Jing Huang. Searching for effective neural extractive summarization: What works and what's next. In *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, pages 1049–1058, 2019.

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