

Zhen Wang

✉: zhenwang9102@gmail.com

🌐: <https://zhenwang9102.github.io>

RESEARCH INTERESTS

My research interests lie in areas of machine learning, natural language processing, and data science. I develop principled methods for aligning machine learning models with human needs and proactively assisting humans in solving real-world challenges.

In particular, I'm interested in discovering novel knowledge from massive data ([KDD](#), [EACL](#)), making black-box models more transparent and interpretable ([ACL](#)), better control of large language models (LLMs), including coherence ([ACL](#)), reasoning ([ACL](#)), efficient adaptation ([ICLR](#)). More recently, I have contributed to building LLM agents, augmenting them with planning ([EMNLP](#)), tool using ([NeurIPS](#)), and prompt optimization ([New preprint](#)).

I'm also interested in the applications of LLMs in accelerating scientific discovery, such as clinical, biomedical, and biology research.

WORK EXPERIENCE

Postdoctoral Scholar San Diego, CA, USA
UC San Diego, Halicioğlu Data Science Institute February, 2023 – present
Hosted by [Zhiting Hu](#) and [Eric Xing](#)

Independent Course Instructor Columbus, OH, USA
OSU, Dept. of Computer Science & Engineering Autumn 2022
CSE 5525: Foundations of Speech & Language Processing (Undergrad & Graduate)

Research Intern, MIT-IBM Watson AI Lab Cambridge, MA, USA
Hosted by [Rameswar Panda](#) and [Yoon Kim](#) Summer 2022
Topic: Multi-task prompt tuning for efficient adaptation of large language models

Research Intern, Microsoft Research Redmond Redmond, WA, USA
Hosted by [Nebojsa Jojic](#) Summer 2021
Topic: Coherence boosting and prompt calibration for GPT-3

Research Intern, NEC Labs America Princeton, NJ, USA
Hosted by [Bo Zong](#) Summer 2020
Topic: Learning word embeddings by commonsense knowledge reasoning

Graduate Research Associate Columbus, OH, USA
OSU, Dept. of Computer Science & Engineering 2018–2022
Advisor: [Huan Sun](#)

Graduate Teaching Assistant Columbus, OH, USA
OSU, Dept. of Computer Science & Engineering Autumn 2017
CSE 2111: Modeling and Problem Solving with Spreadsheets and Databases

EDUCATION

The Ohio State University (OSU) Columbus, OH, USA
PhD, Dept. of Computer Science & Engineering 2022
Advisor: [Huan Sun](#)
Thesis: Knowledge-centric NLP: Acquisition, Representation, Transfer, and Reasoning

Université Nice Sophia Antipolis (UNS) Nice, France

Visiting Student, *Polytech Nice Sophia*
Individual Study Advisor: Lionel Fillatre and Michel Barlaud

2015

China University of Petroleum (UPC)
B.Eng. in Electronic Information Engineering
Graduated as 1st-Ranked Student in the Major Overall Ranking

Qingdao, China
2015

PUBLICATIONS
(*joint first author)

- [1] Xinyuan Wang*, Chenxi Li*, **Zhen Wang***, Fan Bai, Luo Haotian, Jiayou Zhang, Nebojsa Jojic, Eric P. Xing, Zhiting Hu. *PromptAgent: Strategic Planning with Language Models Enables Expert-level Prompt Optimization*. Under Review [[arXiv](#)]
- [2] Shibo Hao*, Yi Gu*, Haodi Ma, Joshua Jiahua Hong, **Zhen Wang**, Daisy Zhe Wang, Zhiting Hu. *Reasoning with Language Model is Planning with World Model*. *Proceedings of EMNLP 2023* (Main) [[Paper](#)]
- [3] Shibo Hao, Tianyang Liu, **Zhen Wang**, Zhiting Hu. *ToolkenGPT: Augmenting Frozen Language Models with Massive Tools via Tool Embeddings*. *Proceedings of NeurIPS 2023* (Oral) [[Paper](#)]
- [4] Ana Jojic, **Zhen Wang**, Nebojsa Jojic. *GPT Is Becoming a Turing Machine: Here Are Some Ways to Program It*. Under Review [[arXiv](#)]
- [5] Lingbo Mo, Shijie Chen, Zirui Chen, Xiang Deng, Ashley Lewis, Sunit Singh, Samuel Stevens, Chang-You Tai, **Zhen Wang**, Xiang Yue, Tianshu Zhang, Yu Su, Huan Sun. *Roll Up Your Sleeves: Working with a Collaborative and Engaging Task-Oriented Dialogue System*. *The 2023 SIGDIAL Meeting on Discourse and Dialogue (SIGDIAL 2023)* [[arXiv](#)]
- [6] **Zhen Wang**, Rameswar Panda, Leonid Karlinsky, Rogerio Feris, Huan Sun, Yoon Kim. *Multitask Prompt Tuning Enables Parameter-Efficient Transfer Learning*. *Proceedings of ICLR 2023* [[Paper](#)]
- [7] Batu Ozturkler, Nikolay Malkin, **Zhen Wang**, Nebojsa Jojic. *ThinkSum: Probabilistic Reasoning Over Sets Using Large Language Models*. *Proceedings of ACL 2023* (Main) [[arXiv](#)]
- [8] Janvijay Singh, Fan Bai, **Zhen Wang**. *Frustratingly Simple Entity Tracking with Effective Use of Multi-Task Learning Models*. *Proceedings of EACL 2023* (Main) [[arXiv](#)]
- [9] Lingbo Mo*, **Zhen Wang***, Jie Zhao, Huan Sun. *Knowledge Transfer between Structured and Unstructured Sources for Complex Question Answering* NAACL 2022 *Structured and Unstructured Knowledge Integration (SUKI)* [[Paper](#)]
- [10] **Zhen Wang**, Bo Zong, Wei Cheng, Xuchao Zhang, Yanchi Liu, Wenchao Yu, Jingchao Ni, Haifeng Chen, Huan Sun. *Learning Interpretable Word Representations by Commonsense Knowledge Reasoning*. Under Review
- [11] Nikolay Malkin, **Zhen Wang**, Nebojsa Jojic. *Coherence Boosting: When Your Pre-trained Language Model is Not Paying Enough Attention*. *Proceedings of ACL 2022* (Main) [[Paper](#)]
- [12] Shijie Chen, Zirui Chen, Xiang Deng, Ashley Lewis, Lingbo Mo, Samuel Stevens, **Zhen Wang**, Xiang Yue, Tianshu Zhang, Yu Su, Huan Sun. *Bootstrapping a User-Centered Task-Oriented Dialogue System*. *1st Proceedings of Alexa Prize TaskBot (Alexa Prize 2021)* [[Paper](#)]
- [13] **Zhen Wang**, Bo Zong, Huan Sun. *Modeling Context Pair Interaction for Pairwise Tasks on Graphs* *Proceedings of WSDM 2021* (**Acceptance Rate: 18.6%, Long**) [[Paper](#)]
- [14] **Zhen Wang**, Jennifer Lee, Simon Lin, Huan Sun. *Rationalizing Medical Relation Prediction from Corpus-level Statistics*. *Proceedings of ACL 2020* (Main) [[Paper](#)]

- [15] **Zhen Wang**, Xiang Yue, Soheil Moosavinasab, Yungui Huang, Simon Lin, Huan Sun. *SurfCon: Synonym Discovery on Privacy-Aware Clinical Data* Proceeding of **SIGKDD 2019** (Research Track, Acceptance Rate 14.2%, Oral) [[Paper](#)]
- [16] Xiang Yue, **Zhen Wang**, Jingong Huang, Srinivasan Parthasarathy, Soheil Moosavinasab, Yungui Huang, Simon M. Lin, Wen Zhang, Ping Zhang, Huan Sun. *Graph Embedding on Biomedical Networks: Methods, Applications, and Evaluations*. **Bioinformatics**, Volume 36, Issue 4, 15 February 2020, Pages 1241–1251 (Impact factor: 5.610) [[Paper](#)]
- [17] Jayavardhan Reddy Peddamail, Ziyu Yao, **Zhen Wang**, Huan Sun. *A Comprehensive Study of StaQC for Deep Code Summarization*. *Proceedings of SIGKDD 2018* (Deep Learning Day, SPOTLIGHT) [[Paper](#)]
- [18] Weifeng Liu, **Zhen Wang**, Dapeng Tao, Jun Yu. *Hessian Regularized Sparse Coding for Human Action Recognition* Proceedings of **MMM 2015**, Sydney, Australia [[Paper](#)]

HONORS AND AWARDS

- Top Reviewer Award, NeurIPS 2023 2023
- **Best Paper Award**, SoCal NLP 2023 2023
- Third-Place Honor, Inaugural Alexa Prize TaskBot Challenge 2022
- Graduate Research Award, CSE, OSU 2022
- Graduate Student Research Poster Award (Top 5), CSE, OSU 2021
- SIGIR Student Travel Grant 2021
- **Rising Star in Data Science**, CDAC, University of Chicago 2020
- SIGKDD Student Travel Award 2019
- Excellent Bachelor Degree Thesis Award in Shandong Province, China 2016
- Excellent Graduate Thesis Award of UPC, China 2015
- **China Scholarship Council (CSC) Scholarship** 2015
 - A fully supported visiting program in Polytech Nice Sophia, Nice, France
- **National Scholarship**, China 2014
- Soong Ching Ling Foundation (SCLF) Scholarship, China 2013
- National Scholarship for Encouragement, China 2012

SERVICE

- Area Chair / Senior PC
 - NLPCC 2023
- Program Committee:
 - ACL Rolling Review
 - * 2021 (Oct., Nov.)
 - * 2022 (Jan., April, Sep., Oct., Dec.)
 - * 2023 (Feb., Oct.)
 - NAACL (2021, 2022 [SUKI](#) Workshop)
 - EMNLP (2021, 2022, 2023)
 - ACL (2021, 2023)
 - ICML (2023, 2024)
 - NeurIPS 2023
 - ICLR 2024
 - KDD 2023

- AAAI (2023, 2024)
- NLPCC (2020, 2021, 2022)
- External Reviewer: KDD (2019, 2020), ACL 2018, ICDM 2018

TEACHING EXPERIENCE

- **CSE 5525: Foundations of Speech and Language Processing**
 - † *OSU, Department of Computer Science & Engineering*
Instructor, Autumn 2022 (~30 undergrad and graduate students)
- **Summer School Tutorial: Natural Language Processing in Deep Learning**
 - † *OSU, Foundations of Data Science and AI Community of Practice*
Panelist, June 1 - June 3, 2022 (>180 attendees)
- **CSE 2111: Modeling and Problem Solving with Spreadsheets and Databases**
 - † *OSU, Department of Computer Science & Engineering*
Teaching Assistant, Autumn 2017
- **Panel Discussion: 2001: A Space Odyssey - Science Fiction vs Science Fact**
 - † *OSU, Department of Astronomy*
Panelist, Feb. 2021

INVITED TALKS

- “Augmenting Language Models with Massive Tools and World Models”, June 2023, North Carolina State University
- “Augmenting Language Models with Massive Tools and World Models”, June 2023, George Mason University
- “Towards Efficient and Robust Practice of Large Language Models”, Autumn 2022, UCSD & MBZUAI & CMU
- “Towards Efficient and Robust Practice of Large Language Models”, Autumn 2022, University of Washington
- “Rationalizing Relation Prediction from Corpus-level Statistics”, ACL 2020, July, Online
- “Modeling Context Pair Interaction for Pairwise Tasks on Graphs”, WSDM 2021, March, Online
- “SurfCon: Synonym Discovery on Privacy-Aware Clinical Data”, KDD 2019, August 6, Anchorage, Alaska, USA

REFERENCES

Available upon request