

# Zhen Wang

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## RESEARCH INTERESTS

I am interested in empowering current AI systems with more explicit and human-understandable knowledge, aiming to make them more generalizable, interpretable, and efficient. My research lies in the nexus of natural language processing, deep learning, and data mining, where I study a "full stack" of the **knowledge-centric AI** from ground up: acquisition, representation, and reasoning. My long-term research goal is to transfuse the strengths of human knowledge systems (e.g., intuitive physics, commonsense reasoning) to the next evolution of AI systems.

- **Knowledge Acquisition:** Structured knowledge extraction from text and graphs, Knowledge Graph construction, Knowledge distillation from language models
- **Knowledge Representation:** Word representation learning, Graph embedding learning, Graph neural networks, Commonsense concept learning
- **Knowledge Reasoning:** Multi-hop reasoning over text and graphs (KG reasoning, complex QA), Neuro-symbolic reasoning, Commonsense reasoning
- **Applications:** Natural language interfaces (dialogue systems, question answering), Controllable text generation, Clinical NLP (e.g., knowledge discovery on clinical notes), Bioinformatics

## EDUCATION

**The Ohio State University (OSU)** Columbus, OH, USA  
*PhD Candidate, Dept. of Computer Science & Engineering* 2016–Present  
Advisor: [Huan Sun](#) (Since Autumn 2017)

**Université Nice Sophia Antipolis (UNS)** Nice, France  
*Visiting Student, Polytech Nice Sophia* 2015  
Individual Study Advisor: Lionel Fillatre and Michel Barlaud

**China University of Petroleum (UPC)** Qingdao, China  
*B.S. in Electronic Information Engineering* 2011–2015  
*Graduated as 1st-Ranked Student in the Major Overall Ranking*

## WORK EXPERIENCE

**The Ohio State University** Columbus, OH, USA  
*Graduate Teaching Associate, Dept. of Computer Science & Engineering* Autumn 2022  
*Instructor for CSE 5525: Speech and Language Processing (Undergrad & Graduate)*

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

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

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

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

**PUBLICATIONS**  
(\* equal  
contribution)

- **Knowledge Transfer between Structured and Unstructured Sources for Complex Question Answering**  
Lingbo Mo\*, Zhen Wang\*, Jie Zhao, Huan Sun  
*NAACL 2022 Structured and Unstructured Knowledge Integration (SUKI)* [[Paper](#)]
- **Learning Interpretable Word Representations by Commonsense Knowledge Reasoning**  
Zhen Wang, Bo Zong, Wei Cheng, Xuchao Zhang, Yanchi Liu, Wenchao Yu, Jingchao Ni, Haifeng Chen, Huan Sun  
In Submission.
- **Coherence Boosting: When Your Pretrained Language Model is Not Paying Enough Attention**  
Nikolay Malkin, Zhen Wang, Nebojsa Jojic  
*Proceedings of ACL 2022* [[Paper](#)]
- **Bootstrapping a User-Centered Task-Oriented Dialogue System**  
Shijie Chen, Zirui Chen, Xiang Deng, Ashley Lewis, Lingbo Mo, Samuel Stevens, Zhen Wang, Xiang Yue, Tianshu Zhang, Yu Su, Huan Sun  
*1st Proceedings of Alexa Prize TaskBot (Alexa Prize 2021)* [[Paper](#)]
- **Modeling Context Pair Interaction for Pairwise Tasks on Graphs**  
Zhen Wang, Bo Zong, Huan Sun  
*Proceedings of WSDM 2021 (Acceptance Rate: 18.6%, Long)* [[Paper](#)]
- **Rationalizing Medical Relation Prediction from Corpus-level Statistics**  
Zhen Wang, Jennifer Lee, Simon Lin, Huan Sun  
*Proceedings of ACL 2020 (Acceptance Rate: 22.7%, Long)* [[Paper](#)]
- **SurfCon: Synonym Discovery on Privacy-Aware Clinical Data**  
Zhen Wang, Xiang Yue, Soheil Moosavinasab, Yungui Huang, Simon Lin, Huan Sun  
*Proceeding of SIGKDD 2019 (Research Track, Acceptance Rate 14.2%, Oral)* [[Paper](#)]
- **Graph Embedding on Biomedical Networks: Methods, Applications, and Evaluations**  
Xiang Yue, Zhen Wang, Jingong Huang, Srinivasan Parthasarathy, Soheil Moosavinasab, Yungui Huang, Simon M. Lin, Wen Zhang, Ping Zhang, Huan Sun  
*Bioinformatics, Volume 36, Issue 4, 15 February 2020, Pages 1241–1251 (Impact factor: 5.610)* [[Paper](#)]
- **A Comprehensive Study of StaQC for Deep Code Summarization**  
Jayavardhan Reddy Peddamail, Ziyu Yao, Zhen Wang, Huan Sun  
*Proceedings of SIGKDD 2018 (Deep Learning Day, SPOTLIGHT)* [[Paper](#)]
- **Hessian Regularized Sparse Coding for Human Action Recognition**  
Weifeng Liu, Zhen Wang, Dapeng Tao, Jun Yu  
*Proceedings of MMM 2015, Sydney, Australia* [[Paper](#)]

## HONORS AND AWARDS

- 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

- Program Committee:
  - ACL ARR (Oct’21, Nov’21, Jan’22, April’22)
  - AAAI 2023
  - EMNLP 2021, 2022
  - ACL 2021
  - NAACL 2021
  - 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 (~40 students)
- **Tutorial: Natural Language Processing in Deep Learning Summer School**
  - † 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

## TALKS

- “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
- “Rationalizing Relation Prediction from Corpus-level Statistics”, ACL 2020, July, Online

## REFERENCES

Available upon request