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, CSE 5525: Foundations of Speech & 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

The Ohio State University   Columbus, OH, USA
Graduate Teaching Assistant, Dept. of Computer Science & Engineering   Autumn 2017

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, Ziru 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 Staistics", ACL 2020, July, Online

REFERENCES   Available upon request