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 data efficient. My research lies in the nexus of natural language processing, deep learning, data mining, and studies the "full stack" of the **knowledge-centric AI** from ground up: acquisition, representation and reasoning. My long-term research goal is to transfuse strengths of human learning capabilities (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 reasoning), Neuro-symbolic reasoning, Commonsense reasoning
- Applications: Natural language interfaces (dialogue systems, question answering), Controllable Text generation, Zero-/few-shot language model prompting

EDUCATION

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

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

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

WORK EXPERIENCE

The Ohio State University — Columbus, OH, USA
Research Assistant, Dept. of Computer Science & Engineering — 2018–Present
Advisor: *Prof. Huan Sun*

MIT-IBM Watson AI Lab — Cambridge, MA, USA
Research Intern, Advised by Dr. Rameswar Panda and Prof. Yoon Kim — Summer 2022
Topic: *Multi-task prompt tuning for efficient adaptation of large language models*

Microsoft Research Redmond — Redmond, WA, USA
Research Intern, Advised by Dr. Nebojsa Jojic — Summer 2021
Topic: *Calibrating large language models (GPT-3) by efficient MoE ensembles*

NEC Labs America — Princeton, NJ, USA
Research Intern, Advised by Dr. Bo Zong — Summer 2020
Topic: *Learning word embeddings by commonsense knowledge reasoning*

The Ohio State University — Columbus, OH, USA
Teaching Assistant, Dept. of Computer Science & Engineering — Aug. 2017–Dec. 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]
- **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, Code]
- **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

- 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 2021, Nov 2021, Jan 2022)
  - EMNLP 2021
  - ACL 2021
  - NAACL 2021
  - NLPCC (2020, 2021, 2022)
- External Reviewer: KDD (2019, 2020), ACL 2018, ICDM 2018

TEACHING EXPERIENCE

- **Natural Language Processing Tutorial in Deep Learning Summer School**
  ⊢ *OSU, Foundations of Data Science and AI Community of Practice*
  Invited speaker, June 1 - June 3, 2022
- **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

- "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
- "Modeling Context Pair Interaction for Pairwise Tasks on Graphs", WSDM 2021, March, Online