Haoyu Wang

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Education

2021–Present	**University of Pennsylvania (UPenn), PA**. Ph.D. in Computer and Information Science Advisor: Dan Roth
2019–2021	**University of Pennsylvania (UPenn), PA**. M.S.E. in Computer and Information Science Advisor: Dan Roth
2015–2019	**Shanghai Jiao Tong University (SJTU), Shanghai, China**. B.E. in Information Engineering Advisor: Cewu Lu
2016	**University of Washington (UW), WA**. Exchange Student

Research Interests

NLP/NLU	LLM/LMM Agents, Event-Centric NLU, Knowledge Graph
Statistics	Causal Inference
Vision	Pose Estimation and Tracking

Publications

Peer-reviewed

[16] Haoyu Wang, Hongming Zhang, Kaiqiang Song, Dan Roth, and Dong Yu. **"Event Semantic Classification in Context"**, Conference of the European Chapter of the Association for Computational Linguistics (EACL) - Findings, 2024.

[15] Haoyu Wang, Hongming Zhang, Yueguan Wang, Yuqian Deng, Muhao Chen, and Dan Roth. **"Are All Steps Equally Important? Benchmarking Essentiality Detection in Event Processes"**, Conference on Empirical Methods in Natural Language Processing (EMNLP), 2023.

[14] Yu Feng, Ben Zhou, Haoyu Wang, Helen Jin, and Dan Roth. **"Generic Temporal Reasoning with Differential Analysis and Explanation"**, Association for Computational Linguistics (ACL), 2023.

[13] Haoyu Wang, Hongming Zhang, Yuqian Deng, Jacob R. Gardner, Dan Roth, and Muhao Chen. **"Extracting or Guessing? Improving Faithfulness of Event Temporal Relation Extraction"**, Conference of the European Chapter of the Association for Computational Linguistics (EACL), 2023.

[12] Rotem Dror*, Haoyu Wang*, and Dan Roth. **"Zero-Shot On-the-Fly Event Schema Induction"**, Conference of the European Chapter of the Association for Computational Linguistics (EACL) - Findings, 2023.

[11] Zheng Qi, Elior Sulem, Haoyu Wang, Xiaodong Yu, and Dan Roth. **"Capturing the Content of a Document through Complex Event Identification"**, Joint Conference on Lexical and Computational Semantics (*SEM), 2022.

[10] Xinya Du, Zixuan Zhang, Sha Li, Pengfei Yu, Hongwei Wang, Tuan Lai, Xudong Lin, Ziqi Wang, Iris Liu, Ben Zhou, Haoyang Wen, Manling Li, Darryl Hannan, Jie Lei, Hyounghun Kim, Rotem Dror, Haoyu Wang, Michael Regan, Qi Zeng, Qing Lyu, Charles Yu, Carl Edwards, Xiaomeng Jin, Yizhu Jiao, Ghazaleh Kazeminejad, Zhenhailong Wang, Chris Callison-Burch, Mohit Bansal, Carl Vondrick, Jiawei Han, Dan Roth, Shih-Fu Chang, Martha Palmer, and Heng Ji. **"RESIN-11: Schema-guided Event Prediction for 11 Newsworthy Scenarios"**, Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) - Demo Track, 2022.

[9] Haoyu Wang, Hongming Zhang, Muhao Chen, and Dan Roth. **"Learning Constraints and Descriptive Segmentation for Subevent Detection"**, Conference on Empirical Methods in Natural Language Processing (EMNLP), 2021.

[8] Haoyang Wen, Ying Lin, Tuan M. Lai, Xiaoman Pan, Sha Li, Xudong Lin, Ben Zhou, Manling Li, Haoyu Wang, Hongming Zhang, Xiaodong Yu, Alexander Dong, Zhenhailong Wang, Yi R. Fung, Piyush Mishra, Qing Lyu, Dídac Surís, Brian Chen, Susan W. Brown, Martha Palmer, Chris Callison-Burch, Carl Vondrick, Jiawei Han, Dan Roth, Shih-Fu Chang, and Heng Ji. **"RESIN: A Dockerlized Schema-Guided Cross-document Cross-lingual Cross-media Information Extraction and Event Tracking System"**, Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) - Demo Track, 2021.

[7] Hongming Zhang, Haoyu Wang, and Dan Roth. **"Zero-shot Label-Aware Event Trigger and Argument Classification"**, Association for Computational Linguistics (ACL) - Findings, 2021.

[6] Muhao Chen, Hongming Zhang, Haoyu Wang, and Dan Roth. **"What Are You Trying to Do? Semantic Typing of Event Processes"**, Conference on Computational Natural Language Learning (CoNLL), 2020 (Best Paper Award Nomination).

[5] Haoyu Wang, Muhao Chen, Hongming Zhang, and Dan Roth. **"Joint Constrained Learning for Event-Event Relation Extraction"**, Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020.

[4] Hongming Zhang, Muhao Chen, Haoyu Wang, and Dan Roth. **"Analogous Process Structure Induction for Sub-event Sequence Prediction"**, Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020.

[3] Haoyu Wang, Vivek Kulkarni, and William Yang Wang. **"DOLORES: Deep Contextualized Knowledge Graph Embeddings"**, Automated Knowledge Base Construction (AKBC), 2020.

[2] Yuliang Xiu, Jiefeng Li, Haoyu Wang, Yinghong Fang, and Cewu Lu. **"Pose Flow: Efficient Online Pose Tracking"**, The 29th British Machine Vision Conference (BMVC), 2018.

Others   [1] Zelin Zhao, Gao Peng*, Haoyu Wang*, Haoshu Fang, Chengkun Li, and Cewu Lu. **"Estimating 6D Pose From Localizing Designated Surface Keypoints"**, arXiv preprint, 2018.

Employment

Sep 2019– Present
Research Assistant, CogComp Group at UPenn.
Advisor: Dan Roth
Project: Event-Centric Natural Language Understanding

Feb 2024– Present
Student Researcher, Google.
Advisor: Zhiwei Deng, Tao Li, Yang Li
Project: Building Web Agents with Large Multimodal Models

Jun 2023– Aug 2022
Research Intern, TikTok.
Advisor: Renjie Zheng, Zhan Shi, Kai Song
Project: Building E-Commerce Intelligent Assistant with LLMs

Sep 2022– Apr 2023
Research Intern, Allen Institute for AI.
Advisor: Kyle Richardson, Ashish Sabharwal
Project: Event Causality Identification with Synthetic Control

May 2022– Aug 2022
Research Intern, Tencent AI Lab.
Advisor: Hongming Zhang, Kaiqiang Song
Project: Fine-Grained Event Classification in Context

May 2021– Aug 2021
R&D Intern, Goldman Sachs.
Advisor: Eliot P. Brenner, Johannes Hoffart, Luciano Del Corro
Project: Few-shot Definition Extraction in Financial Documents

Jul 2018– Sep 2018
Research Assistant, UCSB NLP Group.
Advisor: William Wang
Project: Representation Learning of Knowledge Graphs

Dec 2017– May 2019
Research Assistant, MVIG at SJTU.
Advisor: Cewu Lu
Project: Object Pose Estimation, Human Pose Estimation and Tracking

Academic Services

2023	PC Member of ACL Rolling Review, LAK, AAAI, EACL, ACL, NeurIPS, NLPCC, EMNLP
2022	PC Member of ACL Rolling Review, NAACL, EMNLP, AACL-IJCNLP, ICDM
2021	PC Member of WWW

Presentations

Apr 2022	Are All Steps Equally Important? Benchmarking Essentiality Detection of Events. *Colloquium talk at MASC-SLL'22*
Nov 2021	Learning Constraints and Descriptive Segmentation for Subevent Detection. *Conference talk at EMNLP'21*
Nov 2020	Joint Constrained Learning for Event-Event Relation Extraction. *Conference talk at EMNLP'20*
Jun 2020	DOLORES: Deep Contextualized Knowledge Graph Embeddings. *Conference talk at AKBC'20*

Honors and Awards

May 2021	Outstanding Research Award (Top 2%), UPenn
Jul 2019	Graduated with Highest Honors, SJTU
Oct 2018	SCSK Scholarship (Top 3%), SJTU
Oct 2017	HUAWEI Scholarship (Top 3%), SJTU
May 2017	Honorable Mention in Mathematical Contest in Modeling (MCM)
Apr 2016	First Prize in Unmanned Aerial Vehicle (UAV) Competition (30 teams), SJTU
2016-2019	Academic Excellence Scholarship (All Semesters), SJTU

Selected Courseworks

UPenn	Reasoning for Natural Language Understanding, Intersection of Language and Vision, Applied Machine Learning, Analysis of Algorithms, Theory of Computation, Sub-Linear Algorithms in Learning and Testing, Database and Information Systems, Internet and Web Systems.
SJTU	Big Data Mining, Machine Learning, Data Structure, Hardware Description Language and System Simulation, Information Theory, Principles of Digital Communication, Electronic Circuits, Signals and Systems, Electromagnetic Field, Digital Signal Processing, Wireless Networking Technology.

Skills

Programming	Python, C/C++, SQL, Java, Matlab
Software	MySQL, MongoDB, Docker, PyTorch, TensorFlow
Language	Mandarin, English, Korean