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. in Computer and Information Science
Advisor: Dan Roth

2015–2019 **Shanghai Jiao Tong University (SJTU), Shanghai, China**.
B.Eng. in Information Engineering
Advisor: Cewu Lu

2016 **University of Washington (UW), WA**.
Exchange student

Research Interests

NLP Event-Centric NLU, Structured Prediction, Knowledge Graph

CV Human Pose Tracking, Object Pose Estimation

Publications

Peer-reviewed [1] Haoyu Wang, Hongming Zhang, Muhao Chen, and Dan Roth. **"Learning Constraints and Descriptive Segmentation for Subevent Detection"**, Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP).

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

[3] 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"**, Proceedings of the 2021 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL Demonstrations).

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

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

[6] Muhao Chen, Hongming Zhang, Haoyu Wang, and Dan Roth. **"What Are You Trying to Do? Semantic Typing of Event Processes"**, Proceedings of the 24th Conference on Computational Natural Language Learning (CoNLL), 2020. Best Paper Award Nomination

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

[8] 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 [9] Haoyu Wang, Rotem Dror, and Dan Roth. **"Zero-shot On-the-fly Event Schema Induction"**, NAACL-22, in submission.

[10] Zheng Qi, Elior Sulem, Haoyu Wang, Xiaodong Yu, and Dan Roth. **"Capturing the Content of a Document through Complex Event Identification"**, NAACL-22, in submission.

[11] Hongming Zhang, Yuguan Wang, Yuqian Deng, Haoyu Wang, Muhao Chen, and Dan Roth. **"Are All Steps Equally Important? Benchmarking Essentiality Detection of Events"**, NAACL-22, in submission.

[12] 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, Heng Ji. **"RESIN-11: Schema-guided Event Prediction for 11 Newsworthy Scenarios"**, NAACL-22, in submission.

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

Research Experience

Sep 2019– Present **Research Assistant in Cognitive Computation Group, UPenn**.
Advisor: **Dan Roth**, E. D. Glandt Distinguished Professor, Dept. of Computer and Information Science
Project: **Event-centric NLU**
- Joint constrained learning for event temporal, subevent, and coreferential relation extraction
- Subevent sequence prediction using analogous process structures
- Semantic typing for event processes
- Zero-shot label-aware event trigger and argument classification
- Constrained learning for subevent detection with descriptive segmentation
- Zero-shot event schema induction with generative language models

Jul 2018– Sep 2018 **Research Assistant in Natural Language Processing Group, UCSB**.
Advisor: **William Yang Wang**, Assistant Professor, Dept. of Computer Science
Project: **Representation Learning of Knowledge Graphs**
- New knowledge graph embedding algorithm that captures contextual cues and dependencies among entities and relations

Dec 2017– May 2019 **Research Assistant in Machine Vision and Intelligence Group, SJTU**.
Advisor: **Cewu Lu**, Research Professor, Dept. of Computer Science
Project: **Pose Estimation and Tracking**
- Top-down approach to efficient human pose tracking based on pose flows
- 6D pose estimation with keypoint detector for RGB images

Professional Experience

Jun 2021– Aug 2021 **R&D Intern in CoreAI Group, Goldman Sachs**.
Advisor: **Eliot Brenner**, Vice President, CoreAI Group
Project: **Definition Extraction in Financial Documents**
- Effective few-shot definition extraction of financial terms with GPT-3

Presentations

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*

Academic Services

Reviewer WWW, NAACL, ACL

Honors and Awards

May 2021 Outstanding Research Award, UPenn
Jul 2019 Graduation with Highest Distinction, SJTU
Oct 2018 SCSK Scholarship (Top 3%), SJTU
Oct 2017 HUAWEI Scholarship (Top 3%), SJTU
Apr 2016 First Prize in Unmanned Aerial Vehicle (UAV) Competition (30 teams), SJTU
2016-2019 Academic Excellence Scholarship (All Semesters), SJTU

Skills

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