

Xiang Ren

ASSISTANT PROFESSOR, COMPUTER SCIENCE DEPARTMENT, UNIVERSITY OF SOUTHERN CALIFORNIA
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Professional Experience

University of Southern California

Los Angeles, CA

ASSISTANT PROFESSOR, COMPUTER SCIENCE DEPARTMENT
RESEARCH TEAM LEAD, INFORMATION SCIENCE INSTITUTES
DIRECTOR, USC INTELLIGENCE AND KNOWLEDGE DISCOVERY RESEARCH LAB

02/2018 - now

Snap Inc.

DATA SCIENCE ADVISOR, DATA SCIENCE TEAM

Santa Monica, CA

05/2018 - 03/2019

Stanford University

RESEARCH SCHOLAR, COMPUTER SCIENCE DEPARTMENT

Stanford, CA

06/2017 - 02/2018

Pinterest

SOFTWARE ENGINEERING INTERN, DISCOVERY TEAM

San Francisco, CA

05/2016 - 08/2016

US Army Research Laboratory

STUDENT RESEARCHER, NATURAL LANGUAGE PROCESSING GROUP

Adelphi, MD

04/2016 - 06/2016

Microsoft Research

RESEARCH INTERN, INTERNET SERVICES RESEARCH CENTER. MENTOR: KUANSAN WANG

Redmond, WA

05/2015 - 11/2015

Microsoft Research

RESEARCH INTERN, DATA MANAGEMENT, EXPLORATION AND MINING (DMX) GROUP

Redmond, WA

04/2014 - 08/2014

Research Interests

HUMAN-CENTERED NATURAL LANGUAGE PROCESSING

- Explanation-based model learning, debugging, and refinement
- Neural-symbolic models for building interpretable and faithful systems
- Label efficient methods with weak/ distant supervisions
- Continual learning & rapid task generalization

MACHINE LEARNING

- Graph representation learning, graph neural networks
- Inductive biases for sequence modeling
- Interpretability; Post-hoc model explanation

ARTIFICIAL INTELLIGENCE

- Commonsense knowledge acquisition, representation, and reasoning
- Knowledge graphs: construction & reasoning

Education

Ph.D. in Computer Science

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN, IL, 08/2012 - 02/2018

Advisor: Jiawei Han

Committee members: Chengxiang Zhai, Heng Ji, Tarek Abdelzaher

2018 ACM SIGKDD Doctoral Dissertation Award, C. W. Gear Outstanding Graduate Student Award

M.Sc. in Computer Science

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN, IL, 04/2016

2016 David J. Kuck Outstanding M.S. Thesis Award (given to 1 student from the computer science department)

B.Eng. in Computer Science

ZHEJIANG UNIVERSITY, HANGZHOU, CHINA, 05/2008 - 06/2012

Excellence Senior Thesis Award, Computer Science Department

Graduate with honors, Chu Kochen Honors College

Major Awards and Honors

2021	NSF CAREER Award
2020	Runner-up, The Web Conference 2020 Best Paper Award (2 out of 1,521 submissions)
2020	Runner-up, Best Paper Award, NeurIPS 2020 KR2ML Workshop
2020	Sony Faculty Research Award
2020	Snapchat Faculty Research Award
2019	Forbes' Asia 30 Under 30, Healthcare & Science
2019	Appointed Chair, Information Director, ACM SIGKDD (2019 - now)
2019	JP Morgan AI Research Award
2019	Amazon Faculty Research Award
2019	Adobe Data Science Research Award
2018	Google Faculty Research Award
2018	Winner, ACM SIGKDD Doctoral Dissertation Award
2018	Runner-up, The Web Conference Best Poster Award
2017	Winner, David J. Kuck Outstanding Thesis Award
2016	Google PhD Fellowship (sole winner on Data and Information Management)
2016	C. W. Gear Outstanding Graduate Student Award
2015	Winner, Yahoo-DAIS Research Excellence Award
2015	Winner, Yelp Dataset Challenge
2015	C. L. and Jane W.-S. Liu Research Award
2015	Richard T. Cheng Endowed Fellowship

Research Grants, Sponsorship, Gifts

Total funding (own share) \approx \$3.6 million

- [7] **NSF CAREER:** *Teaching Machine through Human Explanations for Information Extraction.*
- PI. Recommended for funding (pending NSF division approval), \$513,058
- [6] **NSF SciSIP:** *Modeling the Invention, Dissemination, and Translation of Scientific Concepts.*
- PI, NSF 18-29268 (08-01-2018 – 08-31-2020), \$239,988.
- [5] **DARPA Machine Commonsense (MCS):** *Multi-modal Open World Grounded Learning and Inference (MOWGLI).*
- Co-PI (06-01-2019 – 05-31-2023), \$1,026,796 (own share)
- [4] **DARPA Grounded Artificial Intelligence Language Acquisition (GAILA):** *Learning Language from Image and Video Entities.*
- Co-PI (07-01-2019 – 5-31-2022), \$372,747 (own share)
- [3] **Schmidt Family Foundation Grant:** *Using Artificial Intelligence to Support Cognitive Task Analysis.*
- Co-investigator (06-15-2019 – 09-30-2020), \$173,000 (own share)
- [2] **IARPA Better Extraction from Text Towards Enhanced Retrieval (BETTER):** *Cross-Lingual Event & Argument Retrieval.*
- Co-investigator (06-01-2019 – 11-30-2022), \$479,682 (own share)
- [1] **DARPA Systematizing Confidence in Open Research and Evidence (SCORE):** *Macroscopic models for Reproducibility and Replicability of Research Claims in the Social and Behavioral Sciences.*
- Co-investigator, (10-01-2019 – 12-31-2021), \$274,104 (own share);
- [0] **Gift awards from Industry (PI, \$500k+):** JP Morgan AI research award (\$150k), Sony faculty innovation award (\$100k), Google faculty research award (\$80k), Amazon research award (\$80k), Adobe data science award (\$80k), Snapchat gifts (\$20k)

Selected Media Coverage

2020	The Register While text-generating AI can write like humans, it lacks common sense
2020	TechXplore New test reveals AI still lacks common sense
2020	Radio.com AI still lacks common sense according to new research
2020	Teachzine Study finds that an AI's machine language still lacks common sense
2020	OneZero An A.I. Tool Has Been Passing Its Bias to Algorithms for Almost Two Decades
2020	Digital Trends Human moderators can't stop online hate speech alone
2020	Science Daily Context reduces racial bias in hate speech detection algorithms.
2020	Unite AI New Study Attempts to Improve Hate Speech Detection Algorithms.
2019	USC News Want to Know the Secret of a Good Idea? It Could be Hidden in Language.
2016	CS @ Illinois News on Ren's dissertation recognized with SIGKDD Dissertation Award
2015	TripAdvisor Blog on Using NLP to Find "Interesting" Collections of Hotels

Professional Service

COMMUNITY SERVICE & K-12 OUTREACH

Project pitch panel, Linked Learning Engineering Pathway at STEM Academy Hollywood, Los Angeles, 03/ 2021
Project advising, Linked Learning Engineering Pathway at Theodore Roosevelt High School, Los Angeles, 03/ 2021
Guest lecture, Theodore Roosevelt High School, Los Angeles, 02/ 2021
Guest lecture, USC Viterbi Summer High School Intensive in Next-Generation Engineering (SHINE) program, 07/ 2020

ORGANIZER / CHAIR

ACM SIGKDD Information Director, Sep 2018 - present
Trustworthy NLP (**TrustNLP**) Workshop Co-chair, co-located with NAACL 2021
The 2nd Learning from Limited Labeled Data Workshop (**LLD**), Workshop Co-chair, co-located with ICLR 2019
The 4th Workshop on Representation Learning for NLP (**Rep4NLP**), Workshop Co-chair, co-located with ACL 2019
EMNLP Workshop on Deep Learning for Low-resource NLP (**DeepLo**), Workshop Co-chair, co-located with EMNLP 2019
WWW Workshop on Knowledge Graph Technology and Applications, Workshop Co-chair, 2019
First Conference on Automated Knowledge Base Construction (**AKBC**), Workshop Co-chair, 2018
IEEE International Conference on Data Mining (**ICDM**) Data Challenge Track, 2018
First Workshop on Knowledge Base Construction, Reasoning and Mining (**KBCOM**), Co-organizer, 2018

AREA CHAIR / SENIOR PC

2021 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Area Chair, 2021
Annual Meeting of the Association for Computational Linguistics (**ACL**), Area Chair, 2021
The International Conference on Learning Representations (**ICLR**), Area Chair, 2021
Annual Conference of the North American Chapter of the ACL (**NAACL**), Area Chair, 2021
2020 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Area Chair, 2020
The Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**), Senior Area Chair, 2020
2019 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Area Chair, 2019
Annual Meeting of the Association for Computational Linguistics (**ACL**), Area Chair, 2019
The Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**), Area Chair, 2019
2018 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Area Chair, 2018

PROGRAM COMMITTEE

ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**): 2015-20
Conference on Neural Information Processing Systems (**NeurIPS**): 2019-21
International Conference on Machine Learning (**ICML**): 2019-20
Annual Meeting of the Association for Computational Linguistics (**ACL**): 2017-19
Conference on Empirical Methods in Natural Language Processing (**EMNLP**): 2015-18
International World Wide Web Conference (**WWW**): 2017-20
The AAAI Conference on Artificial Intelligence (**AAAI**): 2018-19
International Joint Conference on Artificial Intelligence (**IJCAI**): 2018-19
ACM International Conference on Web Search and Data Mining (**WSDM**): 2017-19
Annual Conference of the North American Chapter of the Association for Computational Linguistics (**NAACL**): 2018-19
ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**): 2017-18
ACM Conference on Information and Knowledge Management (**CIKM**): 2017
The SIGNLL Conference on Computational Natural Language Learning (**CONLL**): 2018
6th Workshop on Automated Knowledge Base Construction (**AKBC**): 2017

JOURNAL REVIEWER

Transactions of the Association for Computational Linguistics (**TACL**)
IEEE Transactions on Knowledge and Data Engineering (**TKDE**)
ACM Transactions on Knowledge Discovery from Data (**TKDD**)

USC SERVICE

PhD Fellowship Committee: 2018, 2019, 2020 (chair of Area-1)
Tenure-track Faculty Hiring Committee: 2019 (NLP), 2020 (Area-1)
Research Faculty Hiring Committee: 2018, 2020

Teaching

Fall2020	Instructor , CSCI 699: Representation Learning for NLP	USC
Fall2019	Instructor , CSCI 699: Advanced Topics in Representation Learning for NLP	USC
Spring2019	Instructor , CSCI 699: Machine Learning for Knowledge Extraction and Reasoning	USC
Fall2018	Instructor , CSCI 699: Introduction to Information Extraction.	USC
2016	Guest Lecturer , CS 412: An Introduction to Data Warehousing and Data Mining.	UIUC
2014	Student Project Leader , CS 512: Data Mining: Principles and Algorithms. Supervised five	UIUC
2013	Guest Lecturer , CS 591: Advanced Topics on Data Mining. Gave lectures on recommender	UIUC

Conference Tutorials

- [9] Scalable Construction and Reasoning of Massive Knowledge Bases
The Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2018.
- [8] Scalable Construction and Querying of Massive Knowledge Bases
27th International World Wide Web Conference (WWW), 2018.
- [7] Construction and Querying of Large-scale Knowledge Bases
ACM Conference on Information and Knowledge Management (CIKM), 2017.
- [6] Mining Entity-Relation-Attribute Structures from Massive Text Corpora
23th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2017.
- [5] Building Structured Databases of Factual Knowledge from Massive Text Data
2017 International Conference on Management of Data (SIGMOD), 2017.
- [4] Constructing Structured Information Networks from Massive Text Corpora
26th International World Wide Web Conference (WWW), 2017.
- [3] Automatic Entity Recognition and Typing in Massive Text Data
2016 International Conference on Management of Data (SIGMOD), 2016.
- [2] Automatic Entity Recognition and Typing in Massive Text Corpora
25th International World Wide Web Conference (WWW), 2016.
- [1] Automatic Entity Recognition and Typing from Massive Text Corpora: A Phrase and Network Mining Approach
21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2015.

Invited Talks

- [23] Amazon Alexa NU Summit, April 2021.
- [22] UIUC NLP Seminar, Mar 2021.
- [21] Google X, Sep 2020.
- [20] CMU LTI Colloquium, Feb 2020.
- [19] UT Austin, Jan 2019.
- [18] Bloomberg, May 2019.
- [17] JP Morgan, May 2019.
- [16] IBM Research, Almaden, May 2019.
- [15] Stanford NLP Seminar, May 2019.
- [14] The Web Conference, Apr 2018.
- [13] Singapore Management University, Nov 2017.
- [12] Stanford University, Aug 2017.
- [11] Peking University, Computer Science Department, Jun 2017.
- [13] Microsoft Research Asia, Jun 2017.
- [10] Tsinghua University, Computer Science Department, Jun 2017.
- [9] Recruiting Technology, Jun 2017.

- [8] IBM Research Almaden, Jun 2017.
- [7] Duke University, Computer Science Department, March 2017.
- [6] University of California, Los Angeles, Computer Science Department, March 2017.
- [5] UC Davis, Computer Science Department, March 2017.
- [4] Georgia Tech, School of Computer Science, March 2017.
- [3] University of Southern California, Computer Science, Feb. 2017.
- [2] Google Research, August 2016.
- [1] Microsoft Research, Redmond, August 2015.

Student Advising and Committee

PhD students at USC: Aaron Chan (CS, 2017-present), Yuchen Lin (CS, 2018-present), Woojeong Jin (CS, 2018-present), Wenxuan Zhou (CS, 2018-2019), Qinyuan Ye (CS, 2019-present), Pei Zou (CS, 2019-present, co-advised w. Jay Pujara), Xisen Jin (CS, 2019-present), Jun Yan (CS, 2019-present), Peifeng Wang (CS, 2019-present, co-advised w. Pedro Szekely), Soumya Sanyal (CS, 2020-present)

PhD thesis committee member at USC: Sahil Garg (CS, 2014), Yaguang Li (CS, 2014), Fenxiao Chen (EE, 2014), Fenxiao Chen (EE, 2014), Akira Matsui (CS, 2017), Yilei Zeng (CS, 2017), Alana Shine (CS, 2017), Yu-Chuan Yen (CS, 2017); Tae Jin Park (ECE, 2015); Nazgol Tavabi (CS, 2015)

Master students at USC: Hongtao Lin (CS, 2017-2018), Yozen Liu (CS, 2017-2018), Junyi Du (CS, 2017-2019), Ouyu Lan (CS, 2018-2019), Dongho Lee (CS, 2018-2020), Seyeon Lee (CS, 2019-present), Suji Kim (CS, 2019-present), Rahul Khanna (CS, 2019-present)

Undergraduate students at USC: Hao Chen (CS, 2018-2019), Yu Cao (CS progressive degree, 2018-2019), Jamin Chen (CS, 2019-2020), Priya Irukulapati (CS, 2019-2020), Kelly Dickson (CS, 2019-2020), Ryan Moreno (CS, 2019-2020)

Students at UIUC: Urvashi Khandelwal (B.S. 2014, UIUC, CRA Outstanding Undergraduate Research Award in 2015, now a PhD student at Stanford University); Bradley Sturt (B.S. 2014, UIUC, Chancellor's Scholar, now a PhD student at MIT); Ahmed El-Kishky (Ph.D. 2019, UIUC, NSFGR Fellowship and NDEG Fellowship); Tarique A. Siddiqui (M.Sc. & Ph.D., UIUC; now researcher at Microsoft Research)

Publications

BOOK

Mining Structures of Factual Knowledge from Text: An Effort-Light Approach
Xiang Ren and Jiawei Han
Morgan & Claypool Publishers, 2018

RESEARCH PAPERS IN CONFERENCE PROCEEDINGS

- [85] Pre-training Text-to-Text Transformers for Concept-centric Common Sense
Wangchunshu Zhou, Dong-Ho Lee, Ravi Kiran Selvam, Seyeon Lee, Bill Yuchen Lin, Xiang Ren
International Conference on Representation Learning (ICLR), 2021
- [84] Learning to Deceive Knowledge Graph Augmented Models via Targeted Perturbation
Mrigank Raman, Siddhant Agarwal, Peifeng Wang, Aaron Chan, Hansen Wang, Sungchul Kim, Ryan Rossi, Handong Zhao, Nedim Lipka, Xiang Ren
International Conference on Representation Learning (ICLR), 2021
Best Paper Award Runner-up at NeurIPS 2020 KR2ML Workshop
- [83] Differentiable Open-Ended Commonsense Reasoning
Bill Yuchen Lin, Haitian Sun, Bhuwan Dhingra, Manzil Zaheer, Xiang Ren, William W. Cohen
2021 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2021
- [82] On Transferability of Bias Mitigation Effects in Language Model Fine-Tuning
Xisen Jin, Francesco Barbieri, Brendan Kennedy, Aida Mostafazadeh Davani, Leonardo Neves, Xiang Ren
2021 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2021
- [81] X-METRA-ADA: Cross-lingual Meta-Transfer learning Adaptation to Natural Language Understanding
Meryem M'hamdi, Doo Soon Kim, Franck Dernoncourt, Trung Bui, Xiang Ren, Jonathan May
2021 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2021

- [80] TaxoClass: Hierarchical Multi-Label Text Classification Using Only Class Names
Jiaming Shen, Wenda Qiu, Yu Meng, Jingbo Shang, Xiang Ren, Jiawei Han
2021 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2021
- [79] IsoBN: Fine-Tuning BERT with Isotropic Batch Normalization
Wenxuan Zhou, Bill Yuchen Lin, Xiang Ren
The AAAI Conference on Artificial Intelligence (AAAI), 2021
- [78] Time-Series Event Prediction with Evolutionary State Graph
Wenjie Hu, Yang Yang, Ziqiang Cheng, Carl Yang, Xiang Ren
ACM International Web Search and Data Mining conference (WSDM), 2021
- [77] Visually Grounded Continual Learning of Compositional Phrases
Xisen Jin, Junyi Du, Arka Sadhu, Ram Nevatia, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [76] Scalable Multi-Hop Relational Reasoning for Knowledge-Aware Question Answering
Yanlin Feng, Xinyue Chen, Bill Yuchen Lin, Peifeng Wang, Jun Yan, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [75] Recurrent Event Network: Autoregressive Structure Inference over Temporal Knowledge Graphs
Woojeong Jin, Meng Qu, Xisen Jin, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [74] Birds have four legs?! NumerSense: Probing Numerical Commonsense Knowledge of Pre-trained Language Models
Bill Yuchen Lin, Seyeon Lee, Rahul Khanna, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [73] Learning Collaborative Agents with Rule Guidance for Knowledge Graph Reasoning
Deren Lei, Gangrong Jiang, Xiaotao Gu, Kexuan Sun, Yuning Mao, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [72] Multi-document Summarization with Maximal Marginal Relevance-guided Reinforcement Learning
Yuning Mao, Yanru Qu, Yiqing Xie, Xiang Ren, Jiawei Han
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [71] SynSetExpan: An Iterative Framework for Joint Entity Set Expansion and Synonym Discovery
Jiaming Shen, Wenda Qiu, Jingbo Shang, Michelle Vanni, Xiang Ren, Jiawei Han
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2020
- [70] Teaching Machine Comprehension with Compositional Explanations
Qinyuan Ye, Xiao Huang, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP Findings), 2020
- [69] CommonGen: A Constrained Text Generation Challenge for Generative Commonsense Reasoning
Bill Yuchen Lin, Ming Shen, Pei Zhou, Chandra Bhagavatula, Yejin Choi, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP Findings), 2020
- [68] RICA: Evaluating Robust Inference Capabilities Based on Commonsense Axioms
Pei Zhou, Rahul Khanna, Bill Yuchen Lin, Daniel Ho, Jay Pujara, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP Findings), 2020
- [67] Connecting the Dots: A Knowledgeable Path Generator for Commonsense Question Answering
Peifeng Wang, Nanyun Peng, Pedro Szekely, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP Findings), 2020
- [66] Will this Idea Spread Beyond Academia? Understanding Knowledge Transfer of Scientific Concepts across Text Corpora
Hancheng Cao, Mengjie Cheng, Zhepeng Cen, Daniel McFarland, Xiang Ren
The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP Findings), 2020
- [65] Learning to Contextually Aggregate Multi-Source Supervision for Sequence Labeling
Ouyu Lan*, Xiao Huang*, Bill Yuchen Lin, He Jiang, Liyuan Liu, X. Ren
Annual Meeting of the Association for Computational Linguistics (ACL), 2020
- [64] Facet-Aware Evaluation for Extractive Summarization
Yuning Mao, Liyuan Liu, Qi Zhu, X. Ren, Jiawei Han
Annual Meeting of the Association for Computational Linguistics (ACL), 2020
- [63] TriggerNER: Learning with Entity Triggers as Explanation for Named Entity Recognition
Bill Yuchen Lin, Dongho Lee, Ming Shen, Xiao Huang, Ryan Moreno, Prashant Shiralkar, X. Ren.
Annual Meeting of the Association for Computational Linguistics (ACL), 2020
- [62] Contextualizing Hate Speech Classifiers with Post-hoc Explanation
Brendan Kennedy*, Xisen Jin*, Aida Mostafazadeh Davani, Morteza Dehghani, X. Ren.
Annual Meeting of the Association for Computational Linguistics (ACL), 2020

- [61] Temporal Attribute Prediction via Joint Modeling of Multi-Relational Structure Evolution
Sankalp Garg*, Navodita Sharma*, Woojeong Jin, Xiang Ren.
International Joint Conference on Artificial Intelligence (IJCAI), 2020
- [60] Alleviate Dataset Shift Problem in Fine-grained Entity Typing with Virtual Adversarial Training
Haochen Shi, Siliang Tang, Xiaotao Gu, Bo Chen, Xiang Ren.
International Joint Conference on Artificial Intelligence (IJCAI), 2020
- [59] Learning from Explanations with Neural Execution Tree
Ziqi Wang, Yujia Qin, Wenxuan Zhou, Jun Yan, Qinyuan Ye, Leonardo Neves, Zhiyuan Liu, Xiang Ren.
International Conference on Representation Learning (ICLR), 2020
- [58] Towards Hierarchical Importance Attribution: Explaining Compositional Semantics for Neural Sequence Models
Xisen Jin, Junyi Du, Zhongyu Wei, Xiangyang Xue, Xiang Ren.
International Conference on Representation Learning (ICLR), 2020 (**Spotlight**)
- [57] NERO: A Neural Rule Grounding Framework for Label-Efficient Relation Extraction
Wenxuan Zhou, Hongtao Lin, Bill Yuchen Lin, Ziqi Wang, Junyi Du, Leonardo Neves, Xiang Ren.
The Web Conference (WWW), 2020. **Runner-up of Best Paper Award**
- [56] KagNet: Learning to Answer Commonsense Questions with Knowledge-Aware Graph Networks
Bill Yuchen Lin, Xinyue Chen, Jamin Chen, Xiang Ren.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [55] Collaborative Policy Learning for Open Knowledge Graph Reasoning
Cong Fu, Tong Chen, Meng Qu, Woojeong Jin, Xiang Ren.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [54] Looking Beyond Label Noise: Shifted Label Distribution Matters in Distantly Supervised Relation Extraction
Qinyuan Ye, Liyuan Liu, Maosen Zhang, Xiang Ren.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [53] Learning Dynamic Context Augmentation for Global Entity Linking
Xiyuan Yang, Xiaotao Gu, Sheng Lin, Siliang Tang, Yueting Zhuang, Fei Wu, Zhigang Chen, Guoping Hu, Xiang Ren.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [52] Hierarchical Text Classification with Reinforced Label Assignment
Yuning Mao, Jingjing Tian, Jiawei Han, Xiang Ren.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [51] HMEAE: Hierarchical Modular Event Argument Extraction
Xiaozi Wang, Ziqi Wang, Xu Han, Zhiyuan Liu, Juanzi Li, Peng Li, Maosong Sun, Jie Zhou, Xiang Ren.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [50] Reporting the Unreported: Event Extraction for Analyzing the Local Representation of Hate Crimes
A. M. Davani, L. Yeh, M. Atari, B. Kennedy, G. P. Wightman, E. Gonzalez, N. Delong, R. Bhatia, A. Mirinjian, X. Ren and M. Dehghani.
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2019
- [49] Eliciting Knowledge from Experts: Automatic Transcript Parsing for Cognitive Task Analysis
J. Du, H. Jiang, J. Shen, X. Ren.
Annual Meeting of the Association for Computational Linguistics (ACL), 2019
- [48] Improving Distantly-supervised Entity Typing with Compact Latent Space Clustering
B. Chen, X. Gu, Y. Hu, S. Tang, Y. Zhuang, X. Ren.
2019 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2019
- [47] Posterior-regularized REINFORCE for Instance Selection in Distant Supervision
Q. Zhang, S. Tang, F. Wu, S. Pu, Y. Zhuang, X. Ren.
2019 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), 2019
- [46] Characterizing and Forecasting User Engagement with In-App Action Graphs: A Case Study of Snapchat
Y. Liu, X. Shi, L. Pierce, X. Ren.
ACM SIGKDD International Conference on Knowledge (KDD), 2019
- [45] AtSNE: Efficient and Robust Visualization on GPU through Hierarchical Optimization
C. Fu, Y. Zhang, D. Cai, X. Ren.
ACM SIGKDD International Conference on Knowledge (KDD), 2019
- [44] Mining Entity Synonyms with Efficient Neural Set Generation
J. Shen, R. Lyu, X. Ren, M. Vanni, B. Sadler, J. Han.
The AAAI Conference on Artificial Intelligence (AAAI), 2019
- [43] Cross-relation Cross-bag Attention for Distantly-supervised Relation Extraction
Y. Yuan, L. Liu, S. Tang, Z. Zhang, Y. Zhuang, F. Wu, X. Ren.
The AAAI Conference on Artificial Intelligence (AAAI), 2019

- [42] Learning Dual Retrieval Module for Semi-supervised Relation Extraction
Hongtao Lin, Jun Yan, Qu Meng, Xiang Ren.
The Web Conference (WWW), 2019
- [41] Jointly Learning Explainable Rules for Recommendation with Knowledge Graph
Weizhi Ma, Min Zhang, Yue Cao, Woojeong Jin, Chenyang Wang, Yiqun Liu, Shaoping Ma, Xiang Ren.
The Web Conference (WWW), 2019
- [40] Integrating Local Context and Global Cohesiveness for Open Information Extraction
Qi Zhu, Xiang Ren, Jingbo Shang, Yu Zhang, Ahmed El-Kishky, Jiawei Han.
ACM International Conference on Web Search and Data Mining (WSDM), 2019
- [39] Open-Schema Event Profiling for Massive News Corpora
Quan Yuan, Xiang Ren, Wenqi He, Chao Zhang, Xinhe Geng, Lifu Huang, Heng Ji, Chin-Yew Lin, Jiawei Han.
ACM Conference on Information and Knowledge Management (CIKM), 2018
- [38] Hierarchical Graph Representation Learning with Differentiable Pooling
Rex Ying, Jiaxuan You, Chris Morris, Xiang Ren, William L. Hamilton, Jure Leskovec
Annual Conference on Neural Information Processing Systems (NIPS), 2018
- [37] Efficient Contextualized Representation: Language Model Pruning for Sequence Labeling
Lucas Liu, Xiang Ren, Jingbo Shang, Jian Peng, Jiawei Han
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2018
- [36] Learning Named Entity Tagger using Domain-Specific Dictionary
Jingbo Shang, Lucas liu, Xiaotao Gu, Xiang Ren, Teng Ren, Jiawei Han
Conference on Empirical Methods in Natural Language Processing (EMNLP), 2018
- [35] GraphRNN: A Deep Generative Model for Graphs
Jiaxuan You, Rex Ying, Xiang Ren, William L. Hamilton, Jure Leskovec
International Conference on Machine Learning (ICML), 2018 (**Spotlight**)
- [34] End-to-End Reinforcement Learning for Automatic Taxonomy Induction
Yuning Mao, Xiang Ren, Jiaming Shen, Xiaotao Gu, Jiawei Han
Annual Meeting of the Association for Computational Linguistics (ACL), 2018
- [33] HiExpan: Task-Guided Taxonomy Construction by Hierarchical Tree Expansion
J. Shen, Z. Wu, D. Lei, C. Zhang, X. Ren, M. T. Vanni, B. M. Sadler, J. Han.
ACM SIGKDD International Conference on Knowledge (KDD), 2018
- [32] Weakly-supervised Relation Extraction by Pattern-enhanced Embedding Learning
Meng Qu, Xiang Ren, Yu Zhang, Jiawei Han
The Web Conference (WWW), 2018
- [31] Open Information Extraction with Global Structure Constraints
Qi Zhu, Xiang Ren, Jingbo Shang, Yu Zhang, Frank Xu, Jiawei Han
The Web Conference (WWW), poster paper, 2018
Runner-up of Best Poster Award
- [30] Indirect Supervision for Relation Extraction using Question-Answer Pairs
Ellen Wu, Xiang Ren, Frank Xu, Ji Li, Jiawei Han
ACM International Conference on Web Search and Data Mining (WSDM), 2018
- [29] Empowering Sequence Labeling with Task-Aware Neural Language Model
L. Liu, J. Shang, X. Ren, F. Xu, H. Gui, J. Peng, J. Han.
The AAAI Conference on Artificial Intelligence (AAAI), 2018
Open-sourced software received over 350 stars on Github as of May 2018
- [28] Dynamic Network Embedding by Modeling Triadic Closure Process
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