

# Xiang Ren

ASSISTANT PROFESSOR, COMPUTER SCIENCE DEPARTMENT, UNIVERSITY OF SOUTHERN CALIFORNIA  
941 Bloom Walk SAL 308, Los Angeles, CA 90089 USA  
☎ (213) 821-4067 | ✉ xiangren@usc.edu | 🌐 www-bcf.usc.edu/xiangren

## Employment

---

### University of Southern California

ASSISTANT PROFESSOR, COMPUTER SCIENCE DEPARTMENT  
RESEARCH TEAM LEAD, INFORMATION SCIENCE INSTITUTES

Los Angeles, CA, USA

Feb 2018 - Present

### Snap Inc.

DATA SCIENCE ADVISOR

Santa Monica, CA, USA

Jun 2018 - Feb 2019

### Stanford University

VISITING RESEARCHER, COMPUTER SCIENCE DEPARTMENT

Stanford, CA, USA

Jun 2017 - Feb 2018

### Pinterest

SOFTWARE ENGINEERING INTERN, DISCOVERY TEAM

San Francisco, CA

May 2016 - Aug. 2016

### US Army Research Laboratory

VISITING RESEARCHER

Adelphi, MD, USA

Apr 2016 - Jun 2016

### Microsoft Research

RESEARCH INTERN, INTERNET SERVICES RESEARCH CENTER

Redmond, WA, USA

May 2015 - Nov 2015

### Microsoft Research

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

Redmond, WA, USA

Apr 2014 - Aug 2014

### Microsoft Research Asia

RESEARCH INTERN, MACHINE LEARNING GROUP

Beijing, China

May 2013 - Aug. 2013

## Education

---

### University of Illinois, Urbana-Champaign

PH.D. IN COMPUTER SCIENCE

- Thesis: *Mining Entity and Relation Structures from Text: An Effort-light Approach*
- ACM SIGKDD Doctoral Dissertation Award

May 2018

### University of Illinois, Urbana-Champaign

M.SC. IN COMPUTER SCIENCE

- David J. Kuck Outstanding M.S. Thesis Award

April 2016

### Zhejiang University

B.ENG. IN COMPUTER SCIENCE, CHU KOCHEN HONORS COLLEGE

Hangzhou, China

June 2012

## Selected Honors & Awards

---

- 2020 *Runner-up*, The Web Conference Best Paper Award
- 2020 *Winner*, Sony Faculty Research Award
- 2019 *Received*, Forbes' Asia 30 Under 30
- 2019 *Received*, JP Morgan AI Research Award
- 2019 *Received*, Adobe Faculty Research Award
- 2019 *Received*, Amazon Faculty Research Award
- 2018 *Received*, Google Faculty 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
- 2017 *Received*, World Wide Web Conference Outstanding Reviewer Award
- 2016 *Winner*, Google PhD Fellowship
- 2016 *Winner*, C. W. Gear Outstanding Graduate Student Award (Link)
- 2015 *Winner*, Yahoo-DAIS Research Excellence Award
- 2015 *Winner*, Yelp Dataset Challenge (Link)

## Grants and Funding

---

- [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), \$776,449 (my part)
- [4] **IARPA Better Extraction from Text Towards Enhanced Retrieval (BETTER): Cross-Lingual Event & Argument Retrieval.**  
- Co-PI (06-01-2019 – 11-30-2022), \$479,682 (my part)
- [3] **DARPA Grounded Artificial Intelligence Language Acquisition (GAILA): Learning Language from Image and Video Entities.**  
- Co-PI (07-01-2019 – 12-24-2020), \$223,122 (my part)
- [2] **Schmidt Family Foundation Gift: Using Artificial Intelligence to Support Cognitive Task Analysis.**  
- Co-PI (03-01-2019 – 06-31-2020), \$170,000 (my part)
- [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.**  
- Key Personnel, (10-01-2019 – 12-31-2021), \$274,104 (my part)

## Science Outreach & Selected Media Coverage

---

- 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
- 2016 **TripAdvisor Blog** on Mining Text for Review Snippets
- 2016 **CS @ Illinois News** on Ren receives prestigious Google Fellowship
- 2016 **Google AI Blog** on announcing 2016 Google PhD fellows
- 2015 **TripAdvisor Blog** on Using NLP to Find "Interesting" Collections of Hotels
- 2015 **Yelp** on Winners of Yelp Dataset Challenges
- 2015 **National Institute of Health BD2K Center** on UIUC Teams Won Twice in the Recent DREAM Prostate Cancer Challenges

## Professional Service

---

### ORGANIZER / CHAIR

- ACM SIGKDD Information Director, Sep 2018 - present
- 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

- 2020 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Machine Learning for NLP, 2020
- 2019 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Document Analysis, 2019
- Annual Meeting of the Association for Computational Linguistics (**ACL**), Information Extraction, 2019
- The Thirty-Fourth AAAI Conference on Artificial Intelligence (**AAAI**), NLP, 2019
- 2018 Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Text Mining, 2018
- International Conference on Computational Linguistics (**COLING**), 2018

### PROGRAM COMMITTEE

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**): 2015-20
- International Conference on Machine Learning (**ICML**): 2019
- 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  
 14th International Workshop on Mining and Learning with Graphs (**MLG**): 2018

## 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**)

## Student Advising

---

**PhD students at USC:** Yuchen Lin (CS, 2018), Woojeong Jin (CS, 2018), Wenxuan Zhou (CS, 2018), Qinyuan Ye (CS, 2019), Pei Zou (CS, 2019), Xisen Jin (CS, 2019), Jun Yan (CS, 2019)

**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)

**Master students at USC:** Hongtao Lin (CS, 2017), Yozen Liu (CS, 2017), Junyi Du (CS, 2017), Ouyu Lan (CS, 2018), Yu Cao (CS progressive degree, 2016), Dongho Lee (CS, 2018)

**Undergraduate students at USC:** Hao Chen (CS, 2016), Jamin Chen (CS, 2016), Priya Irukulapati (CS, 2018), Kelly Dickson (CS, 2018)

**Urvashi Khandelwal** (B.S., UIUC, class of 2014), CRA Outstanding Undergraduate Research Award in 2015, now a PhD student at Stanford University. Collaboration work were published in RecSys 2013, WSDM 2014 and KDD 2014.

**Bradley Sturt** (B.S., UIUC, class of 2014), Chancellor's Scholar, now a PhD student at Massachusetts Institute of Technology. Collaboration work were published in RecSys 2013 and WSDM 2014.

**Ahmed El-Kishky** (Ph.D. student, UIUC), NSF Graduate Research Fellowship and NDSEG Graduate Research Fellowship. Collaborator of a paper in KDD 2014, and tutorials in KDD 2015, WWW 2016 and SIGMOD 2016.

**Tarique A. Siddiqui** (M.Sc., UIUC, class of 2016), Siebel Scholar in 2015, now a PhD student in University of Illinois at Urbana Champaign. Collaborator of a paper in CIKM 2016.

**Wenqi He** (M.Sc., UIUC, class of 2017), Siebel Scholar in 2016. Collaborator of my papers in KDD 2016 and EMNLP 2016.

**Meng Qu** (M.Sc., UIUC, class of 2017), Collaborator of my papers in KDD 2016 and EMNLP 2016.

## Teaching

---

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

## Talks

---

### Invited Talks

- [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.

## 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.

## Publications

---

### BOOK

- [66] 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

- [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  
Xiaozhi 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  
Lekui Zhou, Yang Yang, Xiang Ren, Fei Wu, Yueting Zhuang  
*The AAAI Conference on Artificial Intelligence (AAAI)*, 2018
- [27] Heterogeneous Supervision for Relation Extraction: A Representation Learning Approach  
L. Liu, X. Ren, Q. Zhu, S. Zhi, H. Gui, H. Ji, J. Han.  
*2017 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2017
- [26] An Attention-based Collaboration Framework for Multi-View Network Representation Learning  
M. Qu, J. Tang, J. Shang, X. Ren, M. Zhang, J. Han  
*26th ACM International on Conference on Information and Knowledge Management (CIKM)*, 2017
- [25] Automatic Synonym Discovery with Knowledge Bases  
M. Qu, X. Ren, J. Han  
*23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2017
- [24] MetaPAD: Meta Pattern-driven Attribute Discovery in Massive Text Corpora  
M. Jiang, J. Shang, T. Cassidy, X. Ren, L. M. Kaplan, T. P. Hanratty, J. Han  
*23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2017
- [23] CoType: Joint Extraction of Typed Entities and Relations with Knowledge Bases  
X. Ren, Z. Qiu, W. He, M. Qu, C. R. Voss, H. Ji, T. F. Abdelzaher, J. Han  
*26th International Conference on World Wide Web (WWW)*, 2017.
- [22] Comparative Document Analysis for Large Text Corpora  
X. Ren, Y. Lv, K. Wang, J. Han.  
*10th ACM International Conference on Web Search and Data Mining (WSDM)*, 2017
- [21] AFET: Automatic Fine-Grained Entity Typing by Hierarchical Partial-Label Embedding  
X. Ren, W. He, M. Qu, H. Ji, C. R. Voss, J. Han.  
*2016 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2016, Pages 1369-1378
- [20] Label Noise Reduction in Entity Typing by Heterogeneous Partial-Label Embedding  
X. Ren, W. He, M. Qu, H. Ji, C. R. Voss, J. Han.  
*22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2016, Pages 1825-1834
- [19] FacetGist: Collective Extraction of Document Facets in Large Technical Corpora  
T. A. Siddiqui\*, X. Ren\*, A. Parameswaran, J. Han  
*25th ACM International on Conference on Information and Knowledge Management (CIKM)*, 2016, Pages 871-880
- [18] Representing Documents via Latent Keyphrase Inference  
J. Liu, X. Ren, J. Shang, T. Cassidy, C. R. Voss, J. Han  
*25th International Conference on World Wide Web (WWW)*, 2016, Pages 1057-1067
- [17] Precision Matrix Estimation in High Dimensional Gaussian Graphical Models with Faster Rates  
L. Wang, X. Ren, Q. Gu  
*19th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2016, Pages 177-185
- [16] ClusType: Effective Entity Recognition and Typing by Relation Phrase-Based Clustering  
X. Ren, A. El-Kishky, C. Wang, F. Tao, C. R. Voss, H. Ji, J. Han  
*21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2015, Pages 995-1004
- [15] Synonym Discovery for Structured Entities on Heterogeneous Graphs  
X. Ren, and T. Cheng  
*24th International Conference on World Wide Web (WWW)*, 2015, Pages 443-453
- [14] Mining Quality Phrases from Massive Text Corpora  
J. Liu, J. Shang, C. Wang, X. Ren, J. Han  
*2015 ACM SIGMOD International Conference on Management of Data (SIGMOD)*, 2015, Pages 1729-1744  
**Won grand prize of Yelp Data Challenges in 2015.**
- [13] ClusCite: Effective Citation Recommendation by Information Network-Based Clustering  
X. Ren, J. Liu, X. Yu, U. Khandelwal, Q. Gu, L. Wang, J. Han  
*20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, 2014, Pages 821-830
- [12] Heterogeneous Graph-Based Intent Learning from Queries, Web Pages and Wikipedia Concepts  
X. Ren, Y. Wang, X. Yu, J. Yan, Z. Chen, J. Han  
*7th ACM International Conference on Web Search and Data Mining (WSDM)*, 2014, Pages 23-32

- [11] Personalized Entity Recommendation: A Heterogeneous Information Network Approach  
X. Yu, X. Ren, Y. Sun, Q. Gu, B. Sturt, U. Khandelwal, B. Norick, J. Han  
*7th ACM International Conference on Web Search and Data Mining (WSDM)*, 2014, Pages 283-292  
**Most cited paper in WSDM 2014**
- [10] Automatic Construction and Ranking of Topical Keyphrases on Collections of Short Documents  
M. Danilevsky, C. Wang, N. Desai, X. Ren, J. Guo, J. Han  
*2014 SIAM International Conference on Data Mining (SDM)*, 2014, Pages 398-406
- [9] Semantic Frame-Based Document Representation for Comparable Corpora  
H. Kim, X. Ren, Y. Sun, C. Wang, J. Han  
*IEEE 13th International Conference on Data Mining (ICDM)*, 2013, Pages 350-359  
(Acceptance rate: 94/809 = 11.6%)
- [8] HeteRec: Entity Recommendation in Heterogeneous Information Networks with Implicit User Feedback  
X. Yu, X. Ren, Y. Sun, B. Sturt, U. Khandelwal, Q. Gu, B. Norick, J. Han  
*7th ACM Recommender Systems Conference (RecSys)*, 2013, Pages 347-350
- [7] Repairing Sparse Low Rank Texture  
X. Liang, X. Ren, Z. Zhang, Y. Ma  
*14th European Conference on Computer Vision (ECCV)*, 2012, Pages 482-495
- [6] A Non-convex Relaxation Approach to Sparse Dictionary Learning  
J. Shi\*, X. Ren\*, G. Dai, J. Wang, Z. Zhang  
*2011 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2011, Pages 1809-1816

## RESEARCH PAPERS IN JOURNALS

- [5] Automated Phrase Mining from Massive Text Corpora  
J. Shang, J. Liu, M. Jiang, X. Ren, J. Han  
*IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2018
- [4] Linearized Alternating Direction Method with Adaptive Penalty and Warm Starts for Fast Solving Transform Invariant Low-Rank Textures  
X. Ren and Z. Lin  
*International Journal of Computer Vision (IJCV)*, Volume 104 Issue 1, August 2013, Pages 1-14

## DEMONSTRATION PAPERS IN CONFERENCE PROCEEDINGS

- [3] LEAN-LIFE: A Label-Efficient Annotation Framework Towards Learning from Annotator Explanation  
D. Lee, R. Khanna, B. Lin, S. Lee, Q. Ye, E. Boschee, L. Neves, X. Ren  
*2020 Annual Meeting of the Association for Computational Linguistics (ACL)*, 2020
- [2] LifeNet: A Structured Network-Based Knowledge Exploration and Analytics System for Life Sciences  
X. Ren, J. Shen, M. Qu, X. Wang, Z. Wu, Q. Zhu, M. Jiang, F. Tao, S. Sinha, D. Liem, P. Ping, R. Weinshilboum, J. Han  
*2017 Annual Meeting of the Association for Computational Linguistics (ACL)*, 2017
- [1] Cross-media Event Extraction and Recommendation  
D. Lu, C. R. Voss, F. Tao, X. Ren, R. Guan, R. Korolov, T. Zhang, D. Wang, H. Li, T. Cassidy, H. Ji, S. Chang, J. Han, W. Wallace, J. Hendler, M. Si, L. Kaplan  
*2016 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL)*, 2016