Xiang Ren

CONTACT INFORMATION

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RESEARCH INTERESTS

My research focuses on **text structure extraction** problems that arise in the context of big data analytics. In particular, I have studied methods that are <u>minimally-supervised</u>, <u>domain-independent</u>, <u>language-independent</u>, and <u>scalable</u> to mine various structures (phrases, entities, relations) from massive text data. Beyond text structure extraction, I am interested in **linked data mining** and **recommender systems**.

EDUCATION

University of Illinois at Urbana-Champaign, Urbana, IL   2012 – 2017 (expected)
- Ph.D. candidate, Computer Science
- Master of Science, Computer Science, Degree conferred in April, 2015
- Advisor: Prof. Jiawei Han

Zhejiang University, Hangzhou, Zhejiang, China   2008 - 2012
- Bachelor of Engineering, Computer Science and Chu Kochen Honors College
- Thesis: A warm start SVD method for fast solving TILT
- GPA: 3.95/4.00, Rank: 3% of 199

HONORS AND AWARDS

- **Google Ph.D. Fellowship** in Structured Data/Database Management, 2016
  (given to 52 Ph.D. students <u>around the globe</u>. <u>Sole winner</u> in Structured Data and Database Management category)
- **KDD Rising Star** (Rank 3), Microsoft Academic Search, 2016
  (http://www.bing.com/academic/kdd2016risingstars)
- **C. W. Gear Outstanding Graduate Student Award**, UIUC, 2016
  (highest honor to one graduate student in CS@Illinois)
- **Yahoo!-DAIS Research Excellence Award**, 2015.
- C. L. and Jane W.-S. Liu Award, UIUC, 2015.
  (given to one graduate student in CS@Illinois for his/her promising research)
- Richard T. Cheng Endowed Fellowship, UIUC, 2015.
- Grand Prize, Yelp Dataset Challenge, 2015.
- ACM SIGKDD Student Travel Award, 2015 & 2016.
- ACM SIGIR Student Travel Award, 2016.
- Data Mining Research Award, Data Mining Group, UIUC, 2015 & 2014.
- Runner-up, Prostate Cancer DREAM Challenge, 2015.
- Conference Travel Grant, ECCV, 2012.
- Microsoft Young Fellowship, Microsoft Research Asia, 2011.
- Best Poster Award, Microsoft Research Asia Summer Camp, 2011.
- Research and Innovation Award, Zhejiang University, 2011.

PROFESSIONAL EXPRIENCE

- **Discovery Team, Pinterest**   05/2016 – 8/2016
  Software Engineer Intern   San Francisco, CA, USA
  Developed machine learning pipelines for serving engaging and relevant content. Shipped 3 projects in 12-week internships.

- **Natural Language Processing Group,**   04/2016 – 5/2016
  U.S. Army Research Laboratory   Adelphi, MD, USA

Visiting Researcher, host: Clare R. Voss, Taylor Cassidy
Worked on automatic sentence parsing.

- **Internet Services Research Center (ISRC),**   05/2015 – 11/2015
  Microsoft Research-Technologies   Redmond, WA, USA
  Research Intern, mentors: Kuansan Wang, Yuanhua Lv
  Designed novel models to perform comparative analysis between documents.
  Improved Microsoft Academic Search vertical experience.
  Shipped phrase segmentation and entity recognition tools to Bing Ads productions.

- **Data Management, Exploration and Mining Group,**   05/2014 – 08/2014
  Microsoft Research Labs   Redmond, WA, USA
  Research Intern, mentors: Tao Cheng, Surajit Chaudhuri
  Synonym discovery for entities in structured knowledge bases.
  Improved Bing Synonym API.

- **StylePuzzle Inc.**   08/2013-02/2014
  (www.crunchbase.com/organization/stylepuzzle)   Urbana, IL, USA
  Co-founder
  Designed and built a personalized outfit recommendation system.
  Performed extensive evaluations on the system.

- **Machine Learning Group, Microsoft Research Asia**   05/2013 - 08/2013
  Software Engineer Intern, mentors: Jun Yan, Zheng Chen   Beijing, China
  Modeled user search intents using Wikipedia and Bing query logs.

- **Visual Computing Group, Microsoft Research Asia**   07/2011 - 08/2012
  Software Engineer Intern, mentor: Yi Ma, Zhouchen Lin   Beijing, China
  Developed efficient and effective low-rank optimization algorithms.

- **University of California, Los Angeles**   05/2010 – 08/2010
  Visiting student.

CONFERENCE
TUTORIALS

1. Xiang Ren, Ahmed El-Kishky, Heng Ji, and Jiawei Han. "Automatic Entity Recognition and Typing in Massive Text Data" (**conference tutorial**), ACM Int. Conf. on Management of Data (**SIGMOD**), San Francisco, USA, June 2016.

2. Xiang Ren, Ahmed El-Kishky, Chi Wang, and Jiawei Han. "Automatic Entity Recognition and Typing in Massive Text Corpora" (**conference tutorial**), Proc. of 2016 Int. Conf. on World-Wide Web (**WWW**), Montreal, Canada, April 2016.

3. Xiang Ren, Ahmed El-Kishky, Chi Wang, and Jiawei Han. "Automatic Entity Recognition and Typing from Massive Text Corpora: A Phrase and Network Mining Approach" (**conference tutorial**), ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (**KDD**), Sydney, Australia, August 2015.

PUBLICATIONS

1. Xiang Ren, Wenqi He, Meng Qu, Lifu Huang, Heng Ji, Jiawei Han. "AFET: Automatic Fine-Grained Entity Typing by Hierarchical Partial-Label Embedding", Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Austin, TX, USA, Nov. 2016.

2. Xiang Ren, Wenqi He, Meng Qu, Clare R. Voss, Heng Ji, Jiawei Han. "Label Noise

Reduction in Entity Typing by Heterogeneous Partial-Label Embedding", ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (**KDD**), San Francisco, USA, August 2016.

3. Xiang Ren, Wenqi He, Ahmed El-Kishky, Clare R. Voss, Heng Ji, Meng Qu, Jiawei Han. "Entity Typing: A Critical Step for Mining Structures for Massive Unstructured Text", 12th International Workshop on Mining and Learning with Graphs (**MLG**), Co-located with KDD 2016, San Francisco, USA, August 2016.

4. Tarique Suddiqui*, Xiang Ren*, Aditya Parameswaran, Jiawei Han. "FacetGist: Collective Extraction of Document Facets in Large Technical Corpora." ACM Conference on Information and Knowledge Management (**CIKM**), Indianapolis, USA, Oct. 2016 (*Equal contribution).

5. Lingxiao Wang, Xiang Ren, Quanquan Gu. "Precision Matrix Estimation in High Dimensional Gaussian Graphical Models with Faster Rates", Proc. of 19th Int. Conf. on Artificial Intelligence and Statistics (**AISTATS**), Cadiz, Spain, May, 2016

6. Jialu Liu, Xiang Ren, Jingbo Shang, Taylor Cassidy, Clare R. Voss, Jiawei Han. "Representing Documents via Latent Keyphrase Inference", Proc. of 2016 Int. Conf. on World-Wide Web (**WWW**), Montreal, Canada, April 2016

7. Xiang Ren, Ahmed El-Kishky, Chi Wang, Fangbo Tao, Clare R. Voss, Heng Ji, Jiawei Han. "ClusType: Effective Entity Recognition and Typing by Relation Phrase-Based Clustering", ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (**KDD**), Sydney, Australia, August 2015.

8. Xiang Ren, Tao Cheng "Synonym Discovery for Structured Entities on Heterogeneous Graphs", Proc. of 2015 Int. Conf. on World-Wide Web (**WWW**), Florence, Italy, May 2015

9. Jialu Liu, Jingbo Shang, Chi Wang, Xiang Ren, Jiawei Han. "Mining Quality Phrases from Massive Text Corpora", ACM SIGMOD Int. Conf. on Management of Data (**SIGMOD**), Melbourne, Australia, May 2015. (**Grand Prize winner of Yelp Dataset Challenge**)

10. Xiang Ren, Jialu Liu, Xiao Yu, Urvashi Khandelwal, Quanquan Gu, Lidan Wang, and Jiawei Han "ClusCite: Effective Citation Recommendation by Information Network-Based Clustering", ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (**KDD**), New York City, 2014.

11. Xiang Ren, Yujing Wang, Xiao Yu, Jun Yan, and Jiawei Han. "Joint Intent Learning from Queries, Web Pages and Entities on Heterogeneous Graphs", ACM Conf. on Web Search and Data Mining (**WSDM**), New York City, 2014.

12. Xiao Yu, Xiang Ren, Yizhou Sun, Quanquan Gu, and Jiawei Han. "Personalized Entity Recommendation: A Heterogeneous Information Network Approach", ACM Conf. on Web Search and Data Mining (**WSDM**), New York City, 2014.

13. Marina Danilevsky, Chi Wang, Nihit Desai, Xiang Ren , Jingyi Guo, and Jiawei Han , "Automatic Construction and Ranking of Topical Keyphrases on Collections of Short Documents", SIAM Int. Conf. on Data Mining (**SDM**), Philadelphia, PA, 2014.

14. Fangbo Tao, Jiawei Han, Heng Ji, George Brova,Chi Wang, Ahmed El-Kishky, Jialu Liu, Xiang Ren, Yizhou Sun, "NewsNetExplorer: Automatic Construction and Exploration of News Information Networks", (system demo), ACM SIGMOD Int. Conf. on Management of Data (**SIGMOD**), Snowbird, UT, 2014.

15. Hyungsul Kim, Xiang Ren, Yizhou Sun, Chi Wang, Jiawei Han, "Semantic Frame-Based Document Representation for Comparable Corpora", IEEE Int. Conf. on Data Mining (**ICDM**), Dallas, UT, 2013

16. Xiao Yu, Xiang Ren, Yizhou Sun, Bradley Sturt, Urvashi Khandelwal, Quanquan Gu, Brandon Norick, Jiawei Han, "HeteRec: Entity Recommendation in Heterogeneous Information Networks with Implicit User Feedback", ACM Conference on Recommendation Systems (**RecSys**), Hong Kong, China, 2013.

17. Xiao Yu, Xiang Ren, Quanquan Gu, Yizhou Sun, Jiawei Han, "Collaborative Filtering with Entity Similarity Regularization in Heterogeneous Information Network", Heterogeneous Information Network analysis Workshop of Int. Conf. on Artificial Intelligence (**IJCAI-HINA**), Beijing, China, 2013.

18. Xiang Ren, Zhouchen Lin, "Linearized Alternating Direction Method with Adaptive Penalty and Warm Starts for Fast Solving Transform Invariant Low-Rank Textures", Int. Journal of Computer Vision (**IJCV**), 2013.

19. Xiao Liang, Xiang Ren, Zhengdong Zhang, Yi Ma, "Repairing Sparse Low Rank Texture", European Computer Vision Conference (**ECCV**), Firenze, Italy, 2012.

20. Xiang Ren, Jianping Shi,, Jingdong Wang, Guang Dai, Zhihua Zhang, "A Non-convex Relaxation Approach to Sparse Dictionary Learning", IEEE Int. Conf. on Computer Vision and Pattern Recognition (**CVPR**), Colorado, USA, 2011.

PROFESSIONAL SERVICE

Conference Program Committee: KDD (2015-16), EMNLP (2015-16), SDM 2017, NLPCC (2015-16), SIGMOD'16 Poster Competition.

Journal Reviewer: ACM Transactions on Knowledge Discovery from Data (TKDD), ACM Transactions on Intelligent Systems and Technology (TIST), IEEEs Transactions on Knowledge and Data Engineering (TKDE), Neurocomputing (NEUCOM).

Conference External Reviewer: WSDM'13, WWW'13, KDD'13, ECMLPKDD'13, ICDE'14, WWW'14, WSDM'14, SDM'14, KDD'14, WWW'15.