

# Liyuan Liu

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“We are trying to prove ourselves wrong as quickly as possible, because only in that way can we find progress. - Richard Feynman”

## RESEARCH INTEREST

As growing computation power and data volume keep breaking the glass ceiling for neural models, there is no reason to doubt the next breakthrough would be driven by more resources, or alternatively, better productivity. **Given this resource-dependent nature, I recognize resource productivity as the bottleneck and pursue resource-economical deep learning.**

## EDUCATION

### UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN (UIUC)

PH.D. IN COMPUTER SCIENCE

- Advisor: Prof. Jiawei Han

Illinois, USA

September 2016 – Present

### UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA (USTC)

B.E. IN COMPUTER SCIENCE

- Advisor: Prof. Linli Xu
- Shortlisted for the Guo Moruo Scholarship and graduated *summa cum laude*.

Hefei, China

September 2012 – June 2016

## HONORS & AWARDS

### HIGHLIGHTS

- |   |      |
|---|------|
| Winner of the Topcoder Arabic NER Challenge                           | 2018 |
| • Ranked 1st among 137 registrants and 220 submissions.               |      |
| Guo Moruo Scholarship   | 2015 |
| • Highest honor for USTC undergraduate students.                      |      |
| Google Excellent Scholarship  | 2015 |
| • Only 58 graduate and undergraduate students shortlisted nationwide. |      |

### SCHOLARSHIPS and AWARDS

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|---|------------------|
| Yee Fellowship Award                                  | 2020             |
| Data Mining Group Research Award                      | 2019, 2018, 2017 |
| 3th Place at WSDM Cup 2017 (Vandalism Detection Task) | 2017             |
| ICDM 2015 Travel Award                                | 2015             |
| Samsung Scholarship                                   | 2015             |
| Tencent Innovative Scholarship                        | 2014             |
| Seagate Scholarship                                   | 2013             |
| Scholarship for Outstanding Students                  | 2012, 2013       |

## PROFESSIONAL SERVICE

### PC Member

AAAI2021, NIPS2020, EMNLP2020, ACL2020, WWW2020, AAAI2020, IJCAI2020, EMNLP2019, LLD2019, ACL2019, NAACL2019, AAAI2019, EMNLP2018

### External Reviewer

ACL2018, NAACL2018, WWW2018, AAAI2018, KDD2018, ACL2017, EMNLP2017, KDD2017

## HIGHLIGHT PROJECTS

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**RAdam** 2000+ stars, 200+ forks.  
**LM-LSTM-CRF** 700+ stars, 180+ forks.  
**AutoNER** 200+ stars  
**LD-Net** 100+ stars  
**Torch-Scope** 30k+ downloads.

## EXPERIENCE

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### Data Mining Group @ UIUC

RESEARCH ASSISTANT, ADVISOR: PROF. JIAWEI HAN

IL, USA

September 2016 – PRESENT

### AI Lab @ Tencent

RESEARCH INTERN, ADVISOR: DR. JIANSHU CHEN & DR. LIWEI WANG

WA, USA

May 2020 – Aug 2020

### Deep Learning Group @ MICROSOFT RESEARCH REDMOND

PART-TIME RESEARCHER, ADVISOR: DR. XIAODONG GU & DR. JIANFENG GAO

IL, USA

January 2020 – May 2020

### D365 AI & MSR @ MICROSOFT

RESEARCH INTERN, ADVISOR: DR. WEIZHU CHEN & DR. JIANFENG GAO

WA, USA

May 2019 – August 2019

### AllenNLP @ AI2

RESEARCH INTERN, ADVISOR: DR. MATTHEW E. PETERS

WA, USA

May 2018 – August 2018

### Social Computing Group @ MICROSOFT RESEARCH ASIA

RESEARCH INTERN, ADVISOR: DR. RUIHUA SONG

Beijing, China

July 2015 – May 2016

### Laboratory of Semantic Computing and Data Mining @ USTC

UNDERGRADUATE RESEARCHER, ADVISOR: PROF. LINLI XU

Anhui, China

October 2013 – June 2015

### National Student Innovation Training Program @ USTC

PROJECT LEADER, ADVISOR: PROF. KAI XING

Anhui, China

April 2013 – May 2015

## PUBLICATIONS

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\* indicates equal contribution.

- [1] Chengyu Dong, **Liyuan Liu**, Zichao Li, and Jingbo Shang. “Towards Adaptive Residual Network Training: A Neural-ODE Perspective.” in *Proc. of the Thirty-seventh International Conference on Machine Learning (ICML 2020)*, Vienna, Austria, Jul. 2020.
- [2] **Liyuan Liu**, Xiaodong Liu, Jianfeng Gao, Weizhu Chen, and Jiawei Han. “Understanding the Difficulty of Training Transformers.” in *arXiv:2004.08249 [cs]*.
- [3] Honglei Zhuang, Fang Guo, Chao Zhang, **Liyuan Liu**, and Jiawei Han. “Joint Aspect-Sentiment Analysis with Minimal User Guidance.” in *Proc. of 2020 ACM SIGIR Int. Conf. on Research and development in Information Retrieval (SIGIR’20)*, Xi’an, China, Jul. 2020.
- [4] Yuning Mao, **Liyuan Liu**, Qi Zhu, Xiang Ren, and Jiawei Han. “Facet-Aware Evaluation for Extractive Summarization.” in *Proc. of 2020 Annual Conf. of the Association for Computational Linguistics (ACL’20)*, Seattle, WA, Jul. 2020.
- [5] Ouyu Lan, Xiao Huang, Bill Yuchen Lin, He Jiang, **Liyuan Liu**, and Xiang Ren. “Learning to Contextually Aggregate Multi-Source Supervision for Sequence Labeling.” in *Proc. of 2020 Annual Conf. of the Association for Computational Linguistics (ACL’20)*, Seattle, WA, Jul. 2020.
- [6] **Liyuan Liu**, Haoming Jiang, Pengcheng He, Weizhu Chen, Xiaodong Liu, Jianfeng Gao, and Jiawei Han. “On the Variance of the Adaptive Learning Rate and Beyond.” in *Proc. of 2020 Int. Conf. on Learning Representations (ICLR’20)*, Addis Ababa, Ethiopia, Apr. 2020.

- [7] Jingbo Shang, Xinyang Zhang, **Liyuan Liu**, Sha Li and Jiawei Han. “NetTaxo: Automated Topic Taxonomy Construction from Large-Scale Text-Rich Network”, in *Proc. of 2020 Int. World Wide Web Conf. (WWW’20)*, Taipei, Taiwan, Apr. 2020.
- [8] Zihan Wang\*, Jingbo Shang\*, **Liyuan Liu\***, Lihao Lu, Jiacheng Liu and Jiawei Han. “CrossWeigh: Training Named Entity Tagger from Imperfect Annotations” in *Proc. of 2019 Conf. on Empirical Methods in Natural Language Processing (EMNLP’19)*, Hong Kong, China, Nov. 2019.
- [9] Qinyuan Ye\*, **Liyuan Liu\***, Maosen Zhang, and Xiang Ren. “Looking Beyond Label Noise: Shifted Label Distribution Matters in Distantly Supervised Relation Extraction” in *Proc. of 2019 Conf. on Empirical Methods in Natural Language Processing (EMNLP’19)*, Hong Kong, China, Nov. 2019.
- [10] **Liyuan Liu**, Jingbo Shang, and Jiawei Han. “Arabic Named Entity Recognition: What Works and What’s Next” in *Proc. of the 4th Arabic Natural Language Processing Workshop (WANLP 2019)*, co-located with ACL 2019, Florence, Italy, July 2019.
- [11] Ying Lin, **Liyuan Liu**, Heng Ji, Dong Yu, and Jiawei Han. “Reliability-aware Dynamic Feature Composition for Name Tagging” in *Proc. of the 57th Annual Meeting of the Association for Computational Linguistics (ACL’19)*, Florence, Italy, Jul. 2019.
- [12] Jingbo Shang, Jiaming Shen, **Liyuan Liu**, and Jiawei Han, “Constructing and Mining Heterogeneous Information Networks from Massive Text”, Conference tutorial at *2019 ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD’19)*, Anchorage, AK, Aug. 2019.
- [13] Yujin Yuan, **Liyuan Liu**, Siliang Tang, Zhongfei Zhang, Yueting Zhuang, Fei Wu, and Xiang Ren. “Cross-relation Cross-bag Attention for Distantly-supervised Relation Extraction” in *Proc. of 2019 AAAI Conf. on Artificial Intelligence (AAAI’19)*, Honolulu, HI, Jan. 2019.
- [14] Jingbo Shang\*, **Liyuan Liu\***, Xiaotao Gu, Xiang Ren, Teng Ren, and Jiawei Han “Learning Named Entity Tagger using Domain-Specific Dictionary.” in *Proc. of 2018 Conf. on Empirical Methods in Natural Language Processing (EMNLP’18)*, Brussels, Belgium, Oct. 2018.
- [15] **Liyuan Liu**, Xiang Ren, Jingbo Shang, Jian Peng, and Jiawei Han. “Efficient Contextualized Representation: Compressing Language Models for Sequence Labeling.” in *Proc. of 2018 Conf. on Empirical Methods in Natural Language Processing (EMNLP’18)*, Brussels, Belgium, Oct. 2018.
- [16] **Liyuan Liu**, Jingbo Shang, Frank Xu, Xiang Ren, Huan Gui, Jian Peng, and Jiawei Han. “Empower Sequence Labeling with Task-Aware Neural Language Model.” in *Proc. of 2018 AAAI Conf. on Artificial Intelligence (AAAI’18)*, New Orleans, LA, Feb. 2018.
- [17] **Liyuan Liu\***, Xiang Ren\*, Qi Zhu, Shi Zhi, Huan Gui, Heng Ji, and Jiawei Han. “Heterogeneous Supervision for Relation Extraction: A Representation Learning Approach.”, in *Proc. of 2017 Conf. on Empirical Methods in Natural Language Processing (EMNLP’17)*, Copenhagen, Denmark, Sept. 2017.
- [18] Chao Zhang, **Liyuan Liu**, Dongming Lei, Quan Yuan, Honglei Zhuang, Tim Hanratty, and Jiawei Han, “TrioVecEvent: Embedding-Based Online Local Event Detection in Geo-Tagged Tweet Streams”, in *Proc. of 2017 ACM SIGKDD Int. Conf. on Knowledge Discovery and Data Mining (KDD’17)*, Halifax, Nova Scotia, Canada, Aug. 2017.
- [19] Qi Zhu, Hongwei Ng, **Liyuan Liu**, Ziwei Ji, Bingjie Jiang, Jiaming Shen, and Huan Gui. “Wikidata Vandalism Detection—The Loganberry Vandalism Detector at WSDM Cup 2017”, in *WSDM Cup 2017 Notebook Papers (WSDM Cup’17)*, Feb. 10, Cambridge, UK.
- [20] **Liyuan Liu**, Linli Xu, Zhen Wang, and Enhong Chen, “Community Detection Based on Structure and Content: A Content Propagation Perspective”, in *Proc. of 2016 Int. Conf. on Data Mining (ICDM’16)*, Atlantic City, NJ, USA, Nov. 2015.