Liyuan Liu

"I saw the angel in the marble and carved until I set him free. - Michelangelo"

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RESEARCH INTEREST

Adaptive algorithms for **resource-economical** machine learning –- with a deeper understanding on the underlying mechanisms, algorithms can self-adapt to different scenarios, which makes learning more automatic, robust, and thus resource-economical.

EDUCATION

UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN (UIUC)   *Illinois, USA*
PH.D. IN COMPUTER SCIENCE   *September 2016 – Present*
- Advisor: Prof. Jiawei Han

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA (USTC)   *Hefei, China*
B.E. IN COMPUTER SCIENCE   *September 2012 – June 2016*
- Advisor: Prof. Linli Xu. Shortlisted for the Guo Moruo Scholarship and graduated *summa cum laude*.

SELECTED HONORS & AWARDS

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.**

Yee Fellowship Award   2020
Data Mining Group Research Award   2019, 2018, 2017
Samsung Scholarship   2015
Tencent Innovative Scholarship   2014
Seagate Scholarship   2013

EMPLOYMENT

AI Lab @ Tencent   *WA, USA*
RESEARCH INTERN   *May 2020 – August 2020*

Deep Learning Group @ MICROSOFT RESEARCH REDMOND   *IL, USA*
PART-TIME RESEARCHER, ADVISOR: DR. XIAODONG GU & DR. JIANFENG GAO   *January 2020 – May 2020*

D365 AI & MSR @ MICROSOFT   *WA, USA*
RESEARCH INTERN, ADVISOR: DR. WEIZHU CHEN & DR. JIANFENG GAO   *May 2019 – August 2019*

AllenNLP @ AI2   *WA, USA*
RESEARCH INTERN, ADVISOR: DR. MATTHEW E. PETERS   *May 2018 – August 2018*

Social Computing Group @ MICROSOFT RESEARCH ASIA   *Beijing, China*
RESEARCH INTERN, ADVISOR: DR. RUIHUA SONG   *July 2015 – May 2016*

Laboratory of Semantic Computing and Data Mining @ USTC *Anhui, China*
<small>Undergraduate Researcher, Advisor: Prof. Linli Xu</small> *October 2013 – June 2015*

Professional Service

PC Member   ACL2020, WWW2020, AAAI2020, IJCAI2020, EMNLP2019, LLD2019, ACL2019, NAACL2019, AAAI2019, EMNLP2018

Selected Projects & Publications

Project Highlights   RAdam (2k stars on the Github); LM-LSTM-CRF (700 stars on the Github); Torch-Scope (30k downloads).

*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'20)*.

[2] **Liyuan Liu**, Xiaodong Liu, Jianfeng Gao, Weizhu Chen, and Jiawei Han. "Understanding the Difficulty of Training Transformers." in *arXiv:2004.08249 [cs]*.

[3] 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)*.

[4] **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)*.

[5] 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)*.

[6] 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)*.

[7] **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 Worksho (WANLP 2019)*.

[8] 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)*.

[9] 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)*.

[10] 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)*.

[11] **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)*.

[12] **Liu, Liyuan**, 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)*.

[13] **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)*.

[14] 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)*.

[15] **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)*.