LIJUN WU

(+86) 15901525751 apeterswu@gmail.com https://apeterswu.github.io
Tower 2, Microsoft Research Asia, No. 5, Danling St., Haidian, Beijing, China, 100080

SHORT BIO

Researcher of Deep and Reinforcment Learning Group, Machine Learning Group in Microsoft Research Asia (MSRA). I got my Ph.D. degree from Sun Yat-sen University (SYSU), School of Data and Computer Science in 2020, was a member of joint Ph.D. program between SYSU and MSRA. Prior to that, I obtained my Bachelor's degree in the same department in 2015.

EDUCATION

Sun Yat-Sen University *Sep. 2015 to Jun. 2020*
Ph.D. in Computer Science and Technology⋄ Joint Ph.D. Program with Microsoft Research Asia
School of Data and Computer Science
Ph.D. Supervisor: Tie-Yan Liu and Jianhuang Lai

Sun Yat-Sen University *Sep. 2011 to Jun. 2015*
B.S. in Computer Science and Technology
School of Information Science and Technology

RESEARCH INTERESTS

- **Natural Language Processing**: *Focusing on sequence learning and sequence generation.*
- **Multimodality Learning**: *Focusing on multimodaility data fusion and feature learning.*
- **Biology & Healthcare**: *Focusing on medical and biological embedding learning.*

PUBLICATIONS

- Yang Fan, Yingce Xia, **Lijun Wu**, Shufang Xie, Weiqing Liu, Jiang Bian, Xiangyang Li, Tao Qin, Learning to Reweight with Deep Interactions. In *35th AAAI Conference on Artificial Intelligence* (AAAI-2021)
- Xiang Li, Wenhai Wang, **Lijun Wu**, Shuo Chen, Xiaolin Hu, Jun Li, Jinhui Tang, Jian Yang, Generalized Focal Loss: Learning Qualified and Distributed Bounding Boxes for Dense Object Detection. In *34th Conference on Neural Information Processing System* (NeurIPS-2020)
- **Lijun Wu**, Shufang Xie, Yingce Xia, Yang Fan, Tao Qin, Jianhuang Lai, Tie-Yan Liu, Sequence Generation with Mixed Representations. In *37th International Conference on Machine Learning* (ICML-2020)
- Jinhua Zhu, Yingce Xia, **Lijun Wu**, Di He, Tao Qin, Wengang Zhou, Houqiang Li, Tieyan Liu, Incorporating BERT into Neural Machine Translation. In *8th International Conference on Learning Representations* (ICLR-2020)
- Yiren Wang*, **Lijun Wu***, Yingce Xia, Tao Qin, Chengxiang Zhai, Tie-Yan Liu, Transductive Ensemble Learning for Neural Machine Translation. In *34th AAAI Conference on Artificial Intelligence* (AAAI-2020) (*=equal contribution)
- **Lijun Wu***, Yiren Wang*, Yingce Xia, Tao Qin, Jianhuang Lai, Tie-Yan Liu, Exploiting Monolingual Data at Scale for Neural Machine Translation. In *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2019) (*=equal contribution)

- **Lijun Wu**, Jinhua Zhu, Fei Gao, Di He, Tao Qin, Jianhuang Lai, Tie-Yan Liu, Machine Translation with Weakly Paired Documents. In *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2019)
- **Lijun Wu**, Xu Tan, Tao Qin, Jianhuang Lai, Tie-Yan Liu, Beyond Error Propagation: Language Branching Also Affects the Accuracy of Sequence Generation. In *IEEE Transactions on Audio, Speech and Language Processing* (IEEE TASLP-2019).
- **Lijun Wu***, Yiren Wang*, Yingce Xia, Fei Tian, Fei Gao, Tao Qin, Jianhuang Lai, Tie-Yan Liu, Depth Growing for Neural Machine Translation. In *57th Annual Meeting of the Association for Computational Linguistics* (ACL-2019) (*=equal contribution)
- Jinhua Zhu*, Fei Gao*, **Lijun Wu**, Yingce Xia, Tao Qin, Tie-Yan Liu, Soft Contextual Data Augmentation for Neural Machine Translation. In *57th Annual Meeting of the Association for Computational Linguistics* (ACL-2019) (*=equal contribution)
- Yingce Xia, Xu Tan, Fei Tian, Fei Gao, Weicong Chen, Yang Fan, Linyuan Gong, Yichong Leng, Renqian Luo, Yiren Wang, **Lijun Wu**, Jinhua Zhu, Tao Qin, and Tie-Yan Liu, Microsoft Research Asia's Systems for WMT19. In *Proceedings of the Fourth Conference on Machine Translation* (WMT-2019)
- **Lijun Wu***, Fei Tian*, Yingce Xia, Tao Qin, Jianhuang Lai, Tie-Yan Liu, Learning to Teach with Dynamic Loss Functions. In *32nd Conference on Neural Information Processing Systems* (NeurIPS-2018) (*=equal contribution)
- **Lijun Wu**, Fei Tian, Tao Qin, Jianhuang Lai and Tie-Yan Liu, A Study of Reinforcement Learning for Neural Machine Translation. In *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2018)
- **Lijun Wu***, Xu Tan*, Di He, Fei Tian, Tao Qin, Jianhuang Lai and Tie-Yan Liu, Beyond Error Propagation in Neural Machine Translation: Characteristics of Language Also Matter. In *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing* (EMNLP-2018) (*=equal contribution)
- **Lijun Wu**, Fei Tian, Li Zhao, Jianhuang Lai and Tie-Yan Liu. Word Attention for Sequence to Sequence Text Understanding. In *32nd AAAI Conference on Artificial Intelligence* (AAAI-2018)
- Fei Gao, **Lijun Wu**, Li Zhao, Tao Qin, Xueqi Cheng and Tie-Yan Liu, Efficient Sequence Learning with Group Recurrent Networks. In *16th Annual Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies* (NAACL-HLT-2018)
- **Lijun Wu**, Yingce Xia, Li Zhao, Fei Tian, Tao Qin, Jianhuang Lai and Tie-Yan Liu. Adversarial Neural Machine Translation. In *10th Asian Conference on Machine Learning* (ACML-2018)
- **Lijun Wu**, Li Zhao, Tao Qin, Jianhuang Lai and Tie-Yan Liu, Sequence Prediction with Unlabeled Data by Reward Function Learning. In *26th International Joint Conference on Artificial Intelligence* (IJCAI-2017)
- Yingce Xia, Fei Tian, **Lijun Wu**, Jianxin Lin, Tao Qin, Nenghai Yu, Tie-Yan Liu, Deliberation Networks: Sequence Generation Beyond One-Pass Decoding. In *31st Conference on Neural Information Processing Systems* (NIPS-2017)

PREPRINTS & SUBMISSIONS

- Hany Hassan, Anthony Aue, Chang Chen, Vishal Chowdhary, Jonathan Clark, Christian Federmann, Xuedong Huang, Marcin Junczys-Dowmunt, William Lewis, Mu Li, Shujie Liu, Tie-Yan Liu, Renqian Luo, Arul Menezes, Tao Qin, Frank Seide, Xu Tan, Fei Tian, **Lijun Wu**, Shuangzhi Wu, Yingce Xia, Dongdong Zhang, Zhirui Zhang, Ming Zhou, Achieving Human Parity on Automatic

Chinese to English News Translation (Arxiv 2018, ***The first Chinese-to-English machine translation system that can match the human translation accuracy***)

EXPERIENCES

- Microsoft Research Asia — *Jun. 2020 to Present*
  Researcher ◇ *Deep and Reinforcement Learning & Machine Learning Group*
- Microsoft Research Asia — *Jan. 2019 to Jun. 2020*
  Research Intern ◇ *Machine Learning Group* — Mentor: Tao Qin
- Microsoft Research Asia — *Jun. 2016 to Oct. 2018*
  Research Intern ◇ *Machine Learning Group* — Mentor: Tao Qin
- Microsoft Research Asia — *Jul. 2014 to Jul. 2015*
  Research Intern ◇ *Artificial Intelligence Group* — Mentor: Tie-Yan Liu

HONORS & AWARDS

1. Outstanding Reviewer of EMNLP — *2019*
2. 1st Place of WMT 2019 machine translation competition in 5 translations — *2019*
3. Microsoft Research Asia Ph.D. Fellowship — *2018*
4. Graduate Student National Scholarship — *2018*
5. Stars of Tomorrow Internship Award of Microsoft Research Asia — *2018*
6. Outstanding Graduate Awards — *2015*
7. 1st Place of IBM/IEEE Smarter Planet Challenge — *2013*
8. Undergraduate Student National Scholarship — *2012, 2013*
9. First Class Scholarship — *2012, 2013, 2014*

PROJECTS

WMT 2019 Machine Translation Competition — *Feb. 2019 to Mar. 2019*

☞ Our team participate in the WMT 2019 machine translation competition in 11 translation directions, and we obtain 1st place in 8 translations and 2nd place in other 3 translations. Specifically, I participate in 5 translations: English-German, German-English, German-French, French-German and Russian-English, and we achieve ***1st place in all the 5 translation directions, with more than 1.0 BLEU better than 2nd in the first four translations***. I am the main member in this project, I contribute data filtering, data usage in a scientific way, transdctive distillation technology, soft contextual argumentation technology, multi-agent dual learning technology and experiment running in the project.

Human Parity Neural Machine Translation — *Oct. 2017 to Mar. 2018*

☞ *Neural Machine Translation* (NMT) is proven to significantly outperform traditional translation techniques. To further improve the accuracies of NMT, we explore different structures (deep models, deliberation networks, efficient group network), attention mechanism design (word attention), training loss (sequence level loss), that can boost the performances of NMT from various aspects. ***Specifically, our system firstly matches the human translation accuracy in Chinese-to-English machine translation in Mar. 2018***. I am one of the main contributor of this project, including algorithm design, system implementation and working on experiments.

ChatMate/Chinese Idiom Solitaire — *Jan. 2015 to June. 2015*

☞ We build an internal *ChatMate* system to company children and help with their studies. The system integrates complex rule-based methods to retrieve responses, together with deep learning based methods such as word embeddings. During the development, we implement the chinese idiom solitaire game component and successfully transferred this feature to *XiaoIce* team. I contribute this feature and play as a main contributor in this system.

PROGRAMMING SKILLS

1. Programming Languages: Python, C++, LaTeX
2. Deep Learning Tools: Theano, Tensorflow, Pytorch