

# Qiang WANG

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## Education

- 2015-Present **Ph.D in Computer Science (Natural Language Processing)**, *Northeastern University*, Shenyang, China.  
Supervisor: Professor Jingbo ZHU  
Research: Machine Translation
- 2013-2015 **M.S. in Computer Science (Natural Language Processing)**, *Northeastern University*, Shenyang, China.  
Supervisor: Professor Jingbo ZHU  
Research: Machine Translation
- 2009-2013 **B.S. in Computer Science**, *Northeastern University*, Shenyang, China.  
GPA 3.78/4

## Research Experience

- Sep 2013 **Natural Language Processing Lab**, *Northeastern University*, Shenyang, China.  
-Jul 2019
- Learning Deep Transformer Models for Machine Translation  
It studies deep encoders in Transformer and mathematically explains the importance of the location of layer normalization for deep models. It also proposes a novel connection schema to successfully train a 30-layer Transformer system, which is the deepest encoder so far.
  - Multi-layer Representation Fusion for Neural Machine Translation  
It proposes a multi-layer representation fusion method to overcome the issue that the prediction only depends on the top-most layer with no access to low-level representation.
  - The NiuTrans Machine Translation System for WMT18  
It describes the submission of the NiuTrans neural machine translation system for the WMT 2018 Chinese↔English news translation tasks.
  - Source Segment Encoding for Neural Machine Translation  
It proposes two methods to incorporate source segmentation information in the standard word-based encoder-decoder framework. The model is learned in an end-to-end manner without any supervision of segmentation.
  - A Simple and Effective Approach to Coverage-Aware Neural Machine Translation  
It introduces a coverage-based feature at inference time, which is applied to each decoding step rather than rerank the limited n-best translations.
  - Niuparser: A Chinese Syntactic and Semantic Parsing Toolkit  
It describes a new toolkit for Chinese syntactic and semantic analysis, including word segmentation, part-of-speech tagging, named entity recognition, chunking, constituent parsing, dependency parsing, and semantic role labeling.
- Apr 2019 **Text Intelligence Lab**, *Westlake University*, Hangzhou, China.  
-Jul 2019
- Layer-wise Multiview Learning for Neural Machine Translation  
It proposes to regard the features extracted from different layers as multi-views of the input sentence. Then a consistent regularization method is proposed to encourage the model to keep similar predictions under these views.

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## Professional Experience

- Mar 2016 **Intern**, *NiuTrans Co., Ltd.*, Shenyang, China.
- Dec 2017
- Participated in the engine development of commercial machine translation systems based on LSTM & Transformer models respectively. My contribution is to implement the decoder by the internal tensor calculation library, mainly including network forward computation and batched beam search.
  - Beam search optimization. My contribution is to design a better early stop method to increase the inference speed. In addition, I implemented a decoder that can adaptively adjust the translation speed based on platform load conditions or the features of input sentence.

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## Achievement

- 2018 **Third Conference on Machine Translation (WMT18)**
- **1st Rank** in Chinese-English news translation (out of 16 systems, human-evaluation)
  - 3rd Rank in English-Chinese news translation (out of 16 systems, auto-evaluation)
- 2018 **The 14th China Workshop on Machine Translation (CWMT 2018)**
- **1st Rank** in Chinese-English news translation
  - 2nd Rank in English-Chinese news translation

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## Publications

- 2019 **Qiang Wang**, Bei Li, Tong Xiao, Jingbo Zhu, Changliang Li, Derek F. Wong, Lidia S. Chao. Learning Deep Transformer Models for Machine Translation (ACL)
- 2018 **Qiang Wang**, Fuxue Li, Tong Xiao, Yanyang Li, Yinqiao Li, and Jingbo Zhu. Multi-layer Representation Fusion for Neural Machine Translation. (COLING)
- 2018 **Qiang Wang**, Bei Li, Jiqiang Liu et al. The NiuTrans Machine Translation System for WMT18. (WMT)
- 2018 **Qiang Wang**, Tong Xiao and Jingbo Zhu. Source Segment Encoding for Neural Machine Translation. (NLPCC)
- 2018 Yanyang Li, Tong Xiao, Yinqiao Li, **Qiang Wang**, Changming Xu and Jingbo Zhu. A Simple and Effective Approach to Coverage-Aware Neural Machine Translation. (ACL)
- 2017 **Qiang Wang**, Quan Du, Tong Xiao and Jingbo Zhu. Transfer-Triangulation Method for Pivot-based Statistical Machine Translation (in Chinese). (Journal of Chinese Information Processing)
- 2015 Jingbo Zhu, Muhua Zhu, **Qiang Wang** and Tong Xiao. Niuparser: A Chinese Syntactic and Semantic Parsing Toolkit. (ACL)

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## Award & Honor

- 2016 The First Prize of Qian Weichang Chinese Information Processing Science and Technology Award
- The highest science and technology award in Chinese information processing field
  - Award-winning project: Northeastern University Machine Translation System NiuTrans
- 2014 National Scholarship
- For the first 0.2% undergraduates in China

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## Activities

- Aug 2019 Oral presentation on 57th Annual Meeting of the Association for Computational Linguistics
- Nov 2018 Poster presentation on 3rd Conference on Machine Translation
- Oct 2018 Oral presentation on 14th China Workshop on Machine Translation
- Aug 2018 Poster presentation on 27th International Conference on Computational Linguistics
- Aug 2018 Oral presentation on 7th CCF International Conference on Natural Language Processing and Chinese Computing
- Jul 2015 Demo presentation on 53th Annual Meeting of the Association for Computational Linguistics

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## Miscellaneous

- Programming C/C++, Python, Shell
- Deep Learning Pytorch, Tensorflow, Theano
- Language Mandarin(native), English(read/write/speak)