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KAI ZHAO

research interests Algorithms and theory in Natural Language Processing: Structured Prediction, Deep Learning, Online Learning, Syntactic/Semantic Parsing, Machine Translation, and Textual Entailment.

experience **Senior Research Scientist**, *Google Inc.*, New York, NY. Sep.2020–present.
Research Scientist, *Google Inc.*, New York, NY. Jun.2017–Sep.2020.
Applied deep learning and semantic parsing techniques to analyze and understand user queries for Google Assistant.

Research Assistant, *Oregon State University*, Corvallis, OR. Sep.2015–Jun.2017.

Research Assistant, *City University of New York*, New York, NY. Aug.2012–Sep.2015.

Studied Structured Prediction problems in Natural Language Processing, including:

- deep learning for structured prediction in textual entailment; [5]
- incremental semantic parsing; [8]
- incremental parsing with best-first search strategy; [10]
- discriminative training for statistical machine translation; [9]
- parallelizing online learning for large-scale NLP tasks. [14]

Research Intern, *Google Inc.*, New York, NY. Summer 2015.

Structured Data Team

Mentor: Hao Zhang, Cong Yu and Flip Korn

Investigated inducing entity similarities from web table corpus with alignment models.

Research Intern, *Microsoft Research*, Redmond, WA. Summer 2014.

Machine Translation Group

Mentor: Hany Hassan and Michael Auli

Explored learning translation rules from monolingual continuous representations. [7]

Research Intern, *IBM T.J. Watson Research Center*, Yorktown Heights, NY. Summer 2013.

Multilingual Natural Language Processing Group

Mentor: Abe Ittycheriah and Haitao Mi

Adapted large-scale discriminative training to syntax based machine translation system. [9]

education **Ph.D.**, *Oregon State University*, Corvallis, OR. 2015–2017.

Ph.D. Student, *Graduate Center, City University of New York*, New York, NY. 2010–2015.

Mentor: Liang Huang

Major: Computer Science

Thesis: [Structured Learning with Latent Variables: Theory and Algorithms](#)

Committee: Prasad Tadepalli, Alan Fern, Debashis Mondal, Luke Zettlemoyer (UW)

B.Eng., *University of Science and Technology of China*, Hefei, China. 2006–2010.

Graduated with Honors

Major: Computer Science

publications

1. Liang Huang, He Zhang, Dezhong Deng, Kai Zhao, Kaibo Liu, David Hendrix, and David Mathews. “[LinearFold: Linear-Time Approximate RNA Folding by 5’-to-3’ Dynamic Programming and Beam Search.](#)” *Proceedings of ISMB*, 2019.
2. Kai Zhao and Liang Huang. “[Joint Syntacto-Discourse Parsing and the Syntacto-Discourse Treebank.](#)” *Proceedings of EMNLP*, 2017.
3. Liang Huang, Kai Zhao, and Mingbo Ma. “[When to Finish? Optimal Beam Search for Neural Text Generation \(modulo beam size\).](#)” *Proceedings of EMNLP*, 2017.
4. Mingbo Ma, Kai Zhao, Liang Huang, Bing Xiang, and Bowen Zhou. “[Jointly Trained Sequential Labeling and Classification by Sparse Attention Neural Networks.](#)” *Proceedings of Interspeech*, 2017.
5. Kai Zhao, Liang Huang, and Mingbo Ma. “[Textual Entailment with Structured Attentions and Composition.](#)” *Proceedings of COLING*, 2016.
6. Feifei Zhai, Liang Huang, and Kai Zhao. “[Search-Aware Tuning for Hierarchical Phrase-based Decoding.](#)” *Proceedings of EMNLP*, 2015.
7. Kai Zhao, Hany Hassan, and Michael Auli. “[Learning Translation Models from Monolingual Continuous Representations.](#)” *Proceedings of NAACL*, 2015.
8. Kai Zhao and Liang Huang. “[Type-driven Incremental Semantic Parsing with Polymorphism.](#)” *Proceedings of NAACL*, 2015.
9. Kai Zhao, Liang Huang, Haitao Mi, and Abe Ittycheriah. “[Hierarchical MT Training using Max-Violation Perceptron.](#)” *Proceedings of ACL*, 2014.
10. Kai Zhao, James Cross, and Liang Huang. “[Optimal Incremental Parsing via Best-First Dynamic Programming.](#)” *Proceedings of EMNLP*, 2013.
11. Heng Yu, Liang Huang, Haitao Mi, and Kai Zhao. “[Max-Violation Perceptron and Forced Decoding for Scalable MT Training.](#)” *Proceedings of EMNLP*, 2013.
12. Hao Zhang, Liang Huang, Kai Zhao, and Ryan McDonald. “[Online Learning for Inexact Hypergraph Search.](#)” *Proceedings of EMNLP*, 2013.
13. Yoav Goldberg, Kai Zhao, and Liang Huang. “[Efficient Implementation of Beam-Search Incremental Parsers.](#)” *Proceedings of ACL*, 2013.
14. Kai Zhao and Liang Huang. “[Minibatch and Parallelization for Online Large Margin Structured Learning.](#)” *Proceedings of NAACL*, 2013.

tutorial

Liang Huang, Kai Zhao, and Lemao Liu. “Scalable Large-Margin Structured Learning: Theory and Algorithms.” *ACL*, 2014.