

# Xiao Liu

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## RESEARCH INTERESTS

Information Extraction; Text Mining; Event Extraction & Schema Induction; Knowledge-boosted Application; Application of NLP & Machine Learning

## EDUCATION

**Beijing Institute of Technology**, Beijing, China

- **Ph.D. Candidate**, Computer Science Sep 2017 – Present
  - Adviser: *Prof. Heyan Huang*
  - Topic: *Event extraction on low-resources domains, including automatically inducing event schemas using unsupervised approaches and jointly extracting multiple events in texts*
- **M.S.**, Computer Science (Rank 5/192) Sep 2016 – Jun 2017
  - Adviser: *Prof. Heyan Huang*
  - *Successive postgraduate and doctoral program*
- **B.S.**, Computer Science (Rank 4/220) Sep 2012 – Jun 2016
  - *Outstanding Graduates at BIT and in Beijing*

**Singapore University of Technology and Design**, Singapore

- **Joint Ph.D. student**, Information Science Technology and Design Aug 2018 – Mar 2019
  - Host: *Prof. Yue Zhang* and *Prof. Jun Sun*
  - Topic: *Information extraction using neural latent variable models and variational inferences*

**Nanyang Technological University**, Singapore

- **Joint Ph.D. student**, School of Computer Science and Engineer Mar 2019 – Sep 2019
  - Host: *Prof. Erik Cambria* and *Prof. Yue Zhang*
  - Topic: *Event applications, knowledge-based sentiment analysis and stock market prediction*

## EXPERIENCE

**Microsoft Research Asia**, Beijing, China

- **Research Intern**, Data Mining and Enterprise Intelligence Group Dec 2016 – Nov 2017
  - Worked with Dr Jun Yan and Yaobo Liang on semantic similarity computation and generation.
  - Participated in the FAQ Retrieval project for Pfizer that provides every input question with an answer by retrieving similar standard questions with well-written answers.
  - Built a high-recall filter for top-n similar question-question pairs.
  - Built pair-wise CNNs to classify the question intents for boosting question matching.
  - Built paraphrase generation models by synonyms replacement with language models and beam search.
  - Built a deep learning paraphrase generation model based on an NMT seq2seq framework.

**Netease Youdao**, Beijing, China

- **Research and Development Intern**, Machine Translation Group Nov 2015 – Dec 2016
  - Improved the result of the Japanese-to-Chinese machine translation service by 4% point increment in BLEU.
  - Cleaned corpus from different sources, optimized word segmentation and ordering strategies, enlarged bilingual and monolingual corpus, trained larger language models, and deployed them into the online production environment.
  - Designed the framework and built the first version of parallel sentence pairs crawler with switchable alignment methods on Spark clusters.

PROFESSIONAL SERVICES	<b>Program Committee Member / Reviewer</b>	
	<ul style="list-style-type: none"> <li>▪ <b>Conferences:</b> <i>ACL 2020, EMNLP 2020</i></li> </ul>	
	<b>Secondary Reviewer</b>	
	<ul style="list-style-type: none"> <li>▪ <b>Conferences:</b> <i>ACL 2019, EMNLP 2018, ACL 2018, COLING 2018, CCL 2017, NLPCC 2016</i></li> </ul>	
PUBLICATION	<p>[1] <b>Xiao Liu</b>, Heyan Huang, Yue Zhang. Open Domain Event Extraction Using Neural Latent Variable Models. <i>In Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics (ACL)</i>, Florence, Italy, July 28 - August 2, 2019. <b>Long Oral</b></p> <p>[2] <b>Xiao Liu</b>, Zhunchen Luo, Heyan Huang. Jointly Multiple Events Extraction via Attention-based Graph Information Aggregation. <i>In Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP)</i>, Brussels, Belgium, October 31 - November 4, 2018. <b>Long Oral</b></p> <p>[3] Qingkai Min, Libo Qin, Zhiyang Teng, <b>Xiao Liu</b>, Yue Zhang. Dialog State Tracking Using Neural Latent Variable Models. <i>In Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence (IJCAI)</i>, 2020.</p> <p>[4] Changsen Yuan, Heyan Huang, Chong Feng, <b>Xiao Liu</b>, Xiaochi Wei. Distant Supervision for Relation Extraction with Linear Attenuation Simulation and Non-IID Relevance Embedding. <i>Proceedings of the Thirty-Third AAAI Conference on Artificial Intelligence (AAAI)</i>, Honolulu, Hawaii, USA, January 27-February 1, 2019.</p> <p>[5] Zhunchen Luo, <b>Xiao Liu</b>. Real-time Scholarly Retweeting Prediction System. <i>In Proceedings of the 27th International Conference on Computational Linguistics (COLING)</i>, Santa Fe, New Mexico, USA, August 20-26, 2018.</p>	
SELECTED OPEN-SOURCE PROJECTS	<p>★ <i>represents the number of github stars.</i></p>	
	<ul style="list-style-type: none"> <li>▪ <b>JMEE</b> ★138 <a href="https://github.com/lx865712528/EMNLP2018-JMEE">https://github.com/lx865712528/EMNLP2018-JMEE</a> A neural sequence labeling framework with graph convolution network layer to jointly extract multiple events in a sentence. It gives the best performance on the event extraction task of the ACE 2005 dataset in 2018.</li> <li>▪ <b>ODEE</b> ★57 <a href="https://github.com/lx865712528/ACL2019-ODEE">https://github.com/lx865712528/ACL2019-ODEE</a> A neural-extended unsuoversised schema induction and open domain event extraction framework which supports incrementally learning. A business report corpus is published along with this framework.</li> </ul>	
TEACHING	<b>Beijing Institute of Technology</b> , Beijing, China	
	<ul style="list-style-type: none"> <li>▪ <b>Teaching Assistant</b> Sep 2014 – Jan 2015 <ul style="list-style-type: none"> <li>• Algorithm and Data Structure</li> </ul> </li> <li>▪ <b>Teaching Assistant</b> Sep 2017 – Nov 2017 <ul style="list-style-type: none"> <li>• Selected Topics In New Technology for Computer</li> </ul> </li> </ul>	
HONORS AND AWARDS	<b>High-level Joint Doctoral Students Scholarship</b> , China Aug 2018 – Sep 2019	
	<ul style="list-style-type: none"> <li>▪ China Scholarship Council No. 201806030142</li> <li>▪ Fully funded high-level Ph.D. students for jointly studying outside China offically.</li> </ul>	
	<b>Beijing Outstanding Graduates</b> , Beijing Jun 2016	
	<ul style="list-style-type: none"> <li>▪ This award program recognizes undergraduate students in Beijing universities who show outstanding grades and potential in their studies.</li> </ul>	
	<b>Outstanding Students Award</b> , BIT 2012 – 2019	
	<ul style="list-style-type: none"> <li>▪ Six times.</li> </ul>	

	<ul style="list-style-type: none"> <li>Beijing Institute of Technology Annual Award and Honor. For rewarding excellent (top 5%) students in BIT in the academic year.</li> </ul>	
	<b>China Century Group Scholarship</b>	2014
	<ul style="list-style-type: none"> <li>Sponsor and award 4 undergraduate students and 2 postgraduate students who major in computer science every year in BIT by China Century Group.</li> </ul>	
	<b>First-class Ph.D. Academic Scholarship, BIT</b>	2017 – 2019
	<ul style="list-style-type: none"> <li>Two times.</li> <li>This award program recognizes top 5 Ph.D. students majored in computer science every year.</li> </ul>	
	<b>First-class M.S. Academic Scholarship, BIT</b>	2016
	<ul style="list-style-type: none"> <li>This award program recognizes top 30 master students majored in computer science every year.</li> </ul>	
	<b>First-class Undergraduate Academic Scholarship, BIT</b>	2013 – 2016
	<ul style="list-style-type: none"> <li>Four times.</li> <li>As for undergraduate student, select top 5% by last semester's GPA.</li> </ul>	
<b>COMPETITIONS AND HACKATHONS</b>	<b>Gold Medal in CCPC Regional</b>	Oct 2016
	<ul style="list-style-type: none"> <li>The 2nd China Collegiate Programming Contest Regional Hefei Onsite</li> <li>The rules and difficulties are the same to the ACM/ICPC Regional contests.</li> </ul>	
	<b>Bronze Medal in ACM/ICPC Regional</b>	Oct 2014
	<ul style="list-style-type: none"> <li>The 39th ACM/ICPC Regional Beijing Onsite</li> </ul>	
	<b>Bronze Medal in ACM/ICPC Regional</b>	Dec 2014
	<ul style="list-style-type: none"> <li>The 39th ACM/ICPC Regional Shanghai Onsite</li> </ul>	
<b>ACTIVITIES AND ORGANIZATIONS</b>	<b>Association of Programming and Algorithms, BIT</b>	
	<ul style="list-style-type: none"> <li><b>Co-founder</b></li> </ul>	Sep 2013 – Jun 2014
	<ul style="list-style-type: none"> <li>Organize and invite programming contest experts to deliver lectures.</li> <li>Host Freshman Enrollment Programming Contest in the end of the first semester every year.</li> </ul>	
	<b>Annual Programming Contest, BIT</b>	
	<ul style="list-style-type: none"> <li><b>Problem Provider and Onsite Contest Judge</b></li> </ul>	May 2015 – May 2017
	<ul style="list-style-type: none"> <li>Provided several problems for the contests and verify all the selected problems.</li> <li>Judged program solutions and did the real time Q&amp;A about the problem descriptions during the contests.</li> </ul>	
<b>PROGRAMMING LANGUAGES</b>	<ul style="list-style-type: none"> <li>Python, C/C++, L<sup>A</sup>T<sub>E</sub>X, Java, Scala, Bash under Linux/Unix/iOS &amp; Windows.</li> <li>PyTorch, Tensorflow, Keras.</li> <li>...</li> </ul>	