Tong Wang

WORK EXPERIENCE

Amazon Web Service, Boston, MA · Sep 2022 - Current
Senior Applied Scientist, Machine Learning Solutions Lab

- Designed machine learning solutions for various AWS external customers.

Zoom, Boston (Remote), MA · Oct 2021 - Sep 2022
Senior Machine Learning Engineer, Zoom IQ/AI

- Built and deployed Zoom smart chapter feature to automatically segment meetings based on topics and then generate segment titles. The model showed over 20% improvement compared with the existing production model.
- Led the efforts to build and deploy few-shot/zero-shot Named Entity Recognition model for Zoom contact center chatbot.

Amazon, Cambridge, MA · Feb 2018 - Oct 2021
Applied Scientist, Alexa AI-Natural Understanding

- Led the design and implementation of integrating entity features into large-scale natural language understanding models to improve NLU interpretation ranking, the model was deployed in five Alexa domains and showed 3% improvement in A/B test.
- Built context-aware BERT-based Named Entity Recognition model and Entity Resolution model for Alexa Neural Socialbot.
- Built personalized Entity ranking model in Alexa music domain, which improves music playback by 2% for millions of customers.
- Designed query understanding and entity ranking model using pre-trained BERT and entity graph embedding for implicit reference utterances in Alexa video domain.

Disney Research, Pittsburgh, PA · May 2016 - Aug 2016
Lab Research Associate, Mentor: Dr. Albert Li

- Built a dataset for the narrative quality evaluation task by extracting stories and the upvotes from a social media website Quora.
- Proposed several deep neural networks based on Attention CNN-LSTM that model the textual chunks in a story and their interrelations, which outperform several strong baselines like LSTM, RandomForest.

Shriver Center, UMass Medical School, Charlestown, MA USA · Jun 2015 - Aug 2015
Research Intern, Mentor: John Rochford

- Implemented a lexical simplification system to replace complex words with their simpler synonyms, the result shows a higher correlation with human assessment.

ioMosaic, Salem, NH USA · Jan 2013 - Dec 2013
Software Engineer

- Developed and contributed to the main web application product with C# and Java.

EDUCATION

University of Massachusetts Boston, Boston, MA USA · Jan 2014 - Jan 2018
Ph.D., Computer Science, *Advisor: Dr. Ping Chen*
Thesis: Semantic Representation and Interpretation of Short Texts with Deep Learning

Northeastern University, Boston, MA USA · Sep 2011 - Jan 2013
M.S., Computer Systems Engineering

Huazhong Agricultural University, Wuhan, Hubei China · Sep 2006 - Jan 2010
B.S., Information and Computing Science

CONFERENCE PUBLICATION

1. Mingyue Shang*, **Tong Wang***, Mihail Eric, Jiangning Chen, Jiyang Wang, Matthew Welch, Tiantong Deng, Akshay Grewal, Han Wang, Yue Liu, Yang Liu and Dilek Hakkani-Tur. "Entity Resolution in Open-domain Conversations". NAACL-HLT 2021 Industry Track.

2. **Tong Wang***, Jiangning Chen*, Mohsen Malmir, Shuyan Dong, Xin He, Han Wang, Chengwei Su, Yue Liu and Yang Liu. "Optimizing NLU Reranking Using Entity Resolution Signals in Multi-domain Dialog Systems". NAACL-HLT 2021 Industry Track.

3. Xinli Yu, Mohsen Malmir, Xin He, Jiangning Chen, **Tong Wang**, Yue Wu, Yue Liu and Yang Liu. "Cross Interaction Network for Natural Language Guided Video Moment Retrieval". SIGIR 2021.

4. Ying Lin, Han Wang, Jiangning Chen, **Tong Wang**, Yue Liu, Heng Ji, Yang Liu, and Prem Natarajan. "Personalized Entity Resolution with Dynamic Heterogeneous Knowledge Graph Representations". In Proceedings of The 4th Workshop on e-Commerce and NLP.

5. Bingxuan Huang, Han Wang, **Tong Wang**, Yue Liu, Yang Liu. "Entity Linking for Short Text Using Structured Knowledge Graph via Multi-grained Text Matching." Proc. Interspeech 2020 (2020): 4178-4182.

6. Ping Chen, Fei Wu and **Tong Wang**. A Semantic QA-Based Approach for Text Summarization Evaluation. 32nd AAAI Conference on Artificial Intelligence (AAAI 2018)

7. Jipeng Qiang, Yun Li, Yunhao Yuan, **Tong Wang**. Identifying the Number of Clusters in Short Text using Bayesian Nonparametric Model. The 29th IEEE International Conference on Tools with Artificial Intelligence, Boston, MA, USA, November 6-8, 2017. (ICTAI 2017)

8. Li B, Cardier B, **Wang T**, Metze F. Annotating High-Level Structures of Short Stories and Personal Anecdotes. The 11th Language Resources and Evaluation Conference (LREC). 2018.

9. **Tong Wang**, Ping Chen, Albert Li. Predicting the Quality of Short Narratives from Social Media. The 26th International Joint Conference on Artificial Intelligence. Melbourne, Australia. (IJCAI 2017).

10. Jipeng Qiang, Ping Chen, **Tong Wang**, Xindong Wu. Topic Modeling over Short Texts by Incorporating Word Embeddings." The 21st Pacific-Asia Conference on Knowledge Discovery and Data Mining. (PAKDD 2017)

11. **Tong Wang**, Ping Chen, Kevin Amaral and Jipeng Qiang. An Experimental Study of LSTM Encoder-Decoder Model for Text Simplification. arXiv:1609.03663. (IJCAI-HLTIA 2016)

12. Jipeng Qiang, Ping Chen, Ding Wei, **Tong Wang**, Fei Xie, and Xindong Wu. Topic Discovery from Heterogeneous Texts, IEEE, The 28th IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2016).

13. **Tong Wang**, Ping Chen, John Rochford and Jipeng Qiang. Text Simplification using Neural Machine Translation. Student Abstract. 30th AAAI Conference on Artificial Intelligence. (AAAI 2016)

14. **Tong Wang**, Vish Viswanath, and Ping Chen. Extended topic model for word dependency. Proceedings of the 53rd Annual Meeting of the Association for Computational Linguistics. Vol. 2. 2015. (ACL 2015).

JOURNAL PUBLICATION

1. Qiang, Jipeng, Ping Chen, Wei Ding, **Tong Wang**, Fei Xie, and Xindong Wu. "Heterogeneous-Length Text Topic Modeling for Reader-Aware Multi-Document Summarization." ACM Transactions on Knowledge Discovery from Data (TKDD) 13, no. 4 (2019): 42.

2. **Tong Wang**, Ping Chen and Dan Simovici. A New Evaluation Measure Using Compression Dissimilarity on Text Summarization. *Applied Intelligence* (2016): 1-8

3. Dan Simovici, Ping Chen, **Tong Wang** and Dan Pletea. Compression and Data Mining. *Journal of Communication*, 2015

OTHER PUBLICATION	1. **Tong Wang**, Han Wang, Feiyang Niu, Justin Flammia, Grace Deng, Thiago Mosqueiro, Huitian Lei, Bo Xiao, Yue Liu. Improving Search Relevance in Alexa Entity Resolution. *Amazon Machine Learning Conference* (AMLC 2019)
	2. Thiago Mosqueiro, Huitian Lei, **Tong Wang**, Justin Flammia, Han Wang, Apoorva Balevalachilu, Yue Liu. Automated de-biasing for annotation-based component-independent metrics. *Amazon Machine Learning Conference* (AMLC 2019)

SERVICE

Program Committee Member and Reviewer
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2021, 2022, 2023)
- Empirical Methods in Natural Language Processing (EMNLP 2019, 2020, 2021)
- Annual Meeting of the Association for Computational Linguistics (ACL 2017, 2018, 2019, 2020, 2021, 2022)
- AAAI Conference on Artificial Intelligence (AAAI 2018, 2021, 2022)
- Web Search and Data Mining (WSDM 2021, 2022)
- International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2021, 2022, 2023)
- The International Conference on Computing, Networking and Communications (ICNC 2016, 2017, 2018)
- Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL 2016, 2022)
- The IEEE International Conference on Data Mining series (ICDM 2015) PhD Forum

Journal Reviewer
- Knowledge and Information Systems (KAIS)
- Social Network Analysis and Mining (SNAM)
- Communications of the Association for Information Systems (CAIS)
- IEEE Access

TALKS

- NLU Reranker with ER features, Amazon NLU Conference	Dec 2019
- Entity-centric Language Understanding, Amazon Knowledge Conference	Oct 2019
- Science behind Alexa Entity Resolution, ML Seminar, Brandeis University.	Oct 2019
- Student Panelists: Text Simplification, Boston Accessibility Conference.	Oct 2017
- *Tricks from Deep Neural Networks*, CS697 Big Data Analytics, Umass Boston.	Nov 2016
- *Deep Learning in Natural Language Processing*, CS188SL-01 Science Gateway Seminar II, Umass Boston.	Apr 2016
- *Automated ICT Text Simplification for People with Cognitive Disability*, Boston Accessibility Conference.	Sep 2015

HONORS AND AWARDS

- Randall Malbone Scholarship Award, University of Masschusetts Boston (3%)	2017
- Oracle Doctoral Research Fellowship Award	2017
- 1st Grade Scholarship (3%), Huazhong Agricultural University	2009
- National Scholarship (1%), Ministry of Education of China	2007

SKILLS
- Python, Java, Pytorch, Keras, Tensorflow, PySpark