

Yiqun Yao

2260 Hayward Street, Ann Arbor, MI, 48109-2121
• +1 734-846-8906 • yaoyq@umich.edu

EDUCATION:

- Institute of Automation, Chinese Academy of Sciences (CASIA), Beijing, P.R. China
Ph.D. Pattern Recognition and Intelligent System Sep 2014 – July 2019
- Tsinghua University, Beijing, P.R. China
B.S. Electronic Science and Engineering, Sep 2010 – July 2014

WORKING EXPERIENCE:

2019-present

Postdoctoral Research Fellow, LIT Lab, Department of Computer Science and Engineering,
University of Michigan

RESEARCH INTERESTS:

- Multimodal AI: Sentiment, Stress, Emotion, Question Answering, and Dialogs
- Neural-Symbolic Systems and Textual Reasoning
- Reinforcement and Adversarial Methods for Natural Language Processing

RESEARCH/ENGINEERING EXPERIENCE:

University of Michigan, Ann Arbor, Michigan, United States

Postdoctoral Research Fellow, 2019-present

- *Multimodal Sentiment Analysis*

Collaboration project with P&G company. Released a dataset for multimodal sentiment analysis that features a real-life label distribution, along with a 2-step fine-tuning method based on Transformer, which solves the issues of noisy transcripts and imbalanced labels in real-life settings.

- *Multimodal Stress Detection (Ongoing)*

Collaboration project with Toyota. Using emotion recognition as an auxiliary task for stress detection significantly improve the performances because of the underlying common patterns in both linguistic and acoustic modality. Proposed a dynamic sampling method for multi-task learning.

CASIA, Beijing, P.R. China

Ph.D. Candidate, 2014-2019

- *Visual Reasoning and Dialog*

Proposed a model that densely merge language and visual feature representations on different levels by performing linear modulation in a cascaded manner on both sides. Achieved state-of-the-art experimental results on the VQA-like benchmarks such as CLEVR and NLVR. Designed an adversarial multi-modal feature encoding method that forces language feature vectors to be closely connected to the real-world image distribution. An auxiliary training procedure using this method improved the training efficiency and results of visual dialog systems on VisDial benchmark.

- *Neural-Symbolic Systems for Textual Reasoning*

Redefined human's step-by-step reasoning process while reading textual materials as a sequential decision-making game. Designed a neural-symbolic system to learn to reason with discrete "variable-relation" symbols via reinforcement learning, which was the first attempt in related fields. The model solves the bAbI-20 textual reasoning problems without much samples or any pre-training.

- *Natural Language Processing*

Worked in team and contributed to the developing of: (1) a hierarchical memory network model that

incorporates pointer networks, helps solve the unknown-word problem and benefits Field QA; (2) a reading comprehension model that combines lexical and semantic-based features; (3) a stance detection method that ensembles feature-set methods and end-to-end classifier methods.

Tsinghua University, Beijing, P.R. China
Undergraduate, 2010-2014

- *Speaker Recognition*

Conducted comprehensive experiments on how different dimensionality reduction methods (i.e. PCA, LDA, ISOMAP) influences the recognition accuracies while applied to the i-vector features of audio signals.

PUBLICATIONS:

- **Yiqun Yao**, Verónica Pérez-Rosas, Mohamed Abouelenien, Mihai Burzo. MORSE: Multimodal sentiment analysis for Real-life Settings. In Proceedings of the 2020 International Conference on Multimodal Interaction (ICMI2020).
- **Yiqun Yao**, Jiaming Xu, Bo Xu. The World in My Mind: Visual Dialog with Adversarial Multimodal Feature Encoding. 2019 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL2019).
- **Yiqun Yao**, Jiaming Xu, Feng Wang, Bo Xu. Cascaded Mutual Modulation for Visual Reasoning. 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP2018).
- **Yiqun Yao**, Jiaming Xu, Jing Shi, Bo Xu. Learning to Activate Logic Rules for Textual Reasoning. *Neural Networks*, 2018, 106:42 – 49. (IF: 7.197)
- Jing Shi, Jiaming Xu, **Yiqun Yao**, Bo Xu. Concept Learning through Deep Reinforcement Learning with Memory-Augmented Neural Networks. *Neural Networks*, 2019, 110:47 – 54. (IF: 7.197)
- Jiaming Xu, Jing Shi, **Yiqun Yao**, Suncong Zheng, Bo Xu, Bo Xu. Hierarchical Memory Networks for Answer Selection on Unknown Words. In Proceedings of the 26th International Conference on Computational Linguistics (COLING2016), pp: 2290-2299, Osaka, Japan.
- Jing Shi, Jiaming Xu, **Yiqun Yao**, Suncong Zheng, Bo Xu. Combining Lexical and Semantic-based Features for Answer Sentence Selection. In Proceedings of the 26th International Conference on Computational Linguistics (COLING2016 workshop), pp: 30-38, Osaka, Japan.
- Jiaming Xu, Suncong Zheng, Jing Shi, **Yiqun Yao**, Bo Xu. Ensemble of Feature Sets and Classification Methods for Stance Detection. In Proceedings of the 5th International Conference on Natural Language Processing and Chinese Computing (NLPPCC2016), pp: 679-688, Kunming, China.

SERVICES:

- **Mentor**
Explore Computer Science Research Program, University of Michigan, 2019-2020
- **Volunteer**
Michigan AI Symposium, 2019
- **Reviewer**
COLING 2018, AAI 2019, ACL 2019

GRADUATE COURSES:

- Algorithms, Optimization Theory, Machine Learning, Natural Language Processing, Information Retrieval and Social Computing

TECHNIQUES:

- Python, Matlab, C/C++, Database and Linux OS.
- Rich coding experience with Machine Learning Frameworks: Pytorch, Theano/Keras, SKlearn

and with GPU servers.

SPECIALS:

Good knowledge on:

- Machine Translation
- Traditional Chinese Poem Generation, Evaluation and Composition
- Speech/Speaker Recognition
- Cognitive Models and Spiking Neural Networks

All achieved via work or cooperative work experiences in related fields.