Yuchen Zhuang

Atlanta 30309 | (404)751-7641 | yczhuang@gatech.edu | https://night-chen.github.io/ | F-1 visa student (5-years)

OBJECTIVE

I am seeking for a PhD position and researching opportunities for Natural Language Processing and Machine Learning. I am familiar with the machine learning tasks and have abundant researching experience and skills and I am very willing to learn new techniques and new knowledge. Before researching in NLP tasks, I was researching in mathematical and probability modeling in multi-scale communication. (Details can be seen in the publications on the 2nd page.)

EDUCATION

Electrical and Computer Engineering, Georgia Institute of Technology — Atlanta, Georgia
Master of Electrical and Computer Engineering — *Aug 2019-present*
School of Information Science and Engineering, Southeast University (SEU) — Nanjing, China
Bachelor of Engineering in Information Technology — *Sept 2015-July 2019*
GPA: 88.16/100

AWARDS (SELECTED)

Second Prize of Excellent Undergraduate Student Graduation Thesis in Jiangsu Province. *Jun, 2020;*
Most Influential Graduate Award Nomination **(20/4000)**, Southeast University *Jun, 2019;*
Advanced Individual in Scientific Research, Southeast University *Jun. 2019;*
International Collaboration Symposium on Information, Production & Systems 2017 **Excellent Paper Award** *Dec, 2017;*
Other Scholarship on Innovation or Scientific Research *Aug 2015-Jul 2019;*
First Prize, National High School Mathematical League *Feb 2014;*
First Prize, National Olympiad in Informatics in Provinces

PUBLICATIONS & PATENTS

Natural Language Processing and Machine Learning related papers (Graduation Time):

1. **Zhuang, Y.,** Li, Y., Zhang, J., Kong, L., Zhang, C. (2020). Zero-shot Compositional Event Detection via Graph Modular Network[C]. Paper submitted in **2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL-HLT 2021).**
2. Kong, L., Jiang, H., **Zhuang, Y.,** Lyu, J., Zhao, T., Zhang, C. (2020) Calibrated Language Model Fine-tuning for In- and Out-of-Distribution Data[C]. Paper accepted by **The 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)**.
3. Shi, W., Tong, L., **Zhuang, Y.,** Zhu, Y., Wang, M. (2020). EXAM: An Explainable Attention-based Model for COVID-19 Automatic Diagnosis[C]. Paper accepted by **ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB)**.

Mathematical modeling in multi-scale communication related papers (Undergraduation time):

4. Appear in the Acknowledge part for contributions in paper Zhang C, Ge L, Zhang X, et al. A Uniform Molecular Low-Density Parity Check Decoder[J]. **ACS synthetic biology**, 2018, 8(1): 82-90.
5. Zhang, C., Lu, Y., **Zhuang, Y.**, Tan, X., Zhang, Z., You, X. (2019). Time-varying Functions for Communications Modules Synthesized by Molecular Reactions[J]. ***Invited Paper.*** Paper under revision by ***IEEE Journal on Signal Processing System.***
6. **Zhuang, Y.**, Zhang, C., Tan, X., Zhang, Z., & You, X. (2018). Large-scale Data Processing Based on Chemical Reaction Networks[J]. *Paper under revision by* ***IEEE Transactions on Communications***
7. **Zhuang, Y.**, Zhang, C., Tan, X., Zhang, Z., & You, X. (2018). Synthesis Flows for Complex Arithmetic Functions Based on Chemical Reactions[J]. *Paper under revision by Springer* ***Natural Computing***
8. Zhang, C., Ge, L., **Zhuang, Y.**, Shen, Z., Zhong, Z., Zhang, Z., & You, X. (2018). DNA Computing for Combinational Logic[J]. ***Science China Information Science. DOI: https://doi.org/10.1007/s11432-018-9530-x***
9. **Zhuang, Y.**, You, X., & Zhang, C. (2018). Complex Arithmetic Computation Based on Chemical Reaction Networks[C]. *Paper accepted by* ***IEEE Workshop on Signal Processing Systems (SiPS 2018)***.
10. **Zhuang, Y.**, Ge, L., Wei, W., Zhao, J., You, X., & Zhang, C. (2017). A Synthesis Flow for Fast Convolution Unit Based on Molecular Reactions[C]. ***International Conference on Wireless Communications and Signal Processing (WCSP 2017). DOI: 10.1109/WCSP.2017.8170998***
11. Shen, Z., Zhang, C., Ge, L., **Zhuang, Y.**, & You, X. (2016). Synthesis of Probability Theory Based on Molecular Computation[C]. ***IEEE Workshop on Signal Processing Systems (SiPS 2016). DOI: 10.1109/SiPS.2016.13***
12. **Zhuang, Y.**, Zhang, C., & You, X. (2017). ***China Patent No.: 201710499017. X.***, State Intellectual Property Office of China.

13. Zhang, C., **Zhuang. Y.**, & You, X. (2018). ***China Patent No.: 201810875142.0.***, State Intellectual Property Office of China.

ACADEMIC & WORKING EXPERIENCE

Researching Assistant, **Zero-shot learning on Twitter data, GaTech,** Atlanta, Georgia *Apr 2020-present*

- Crawl data from Twitter related to COVID19 and do some preprocessing and filtering to form a new novel dataset, which can be both utilized in Sequence labeling and Sentence Classification.
- Design a model combining modular network and graph neural network to accomplish a generalized zero-shot event detection on the existing and generated dataset.
- Design abundant experiments and make submission to NAACL-HLT 2021.

Researching Assistant, **Calibration on NLP pretrained models, GaTech,** Atlanta, Georgia *Aug 2019-present*

- Seek methods to improve the calibration of pretrained language model, like BERT.
- Learn about the Bayesian methods like MCMC and SWAG to solve the problem and code experiments to test performances as a different direction of solving the problem.
- Help design regularization methods on both in- and out-of-distribution data to improve the calibration of the pretrained model. Design different experiments on different dataset and make a summary on all of the abundant experiments
- Help write the paper and draw the graphs in the paper. Paper accepted in EMNLP 2020.

Researching Assistant, **Automatic Diagnosis System for COVID-19, GaTech,** Atlanta, Georgia *Mar 2020-present*

- Seek existing biomedical image classification algorithms in chest X-ray imaging and establish an automatic diagnosis system for COVID-19 to differentiate the bacterial pneumonia, COVID-19 and normal cases.
- Propose a novel explainable COVID-19 classification model based on dual-attention mechanism, combining channel-wise and spatial-wise attention to highlight potential infection regions.
- Help write the paper and draw figures in the paper. Paper has been accepted in ACM-BCB 2020 and extended to a journal version in Journal of Biomedical and Health Informatics (J-BHI).

Teaching Assistant, **CS 4641/7641-Machine Learning, GaTech,** Atlanta, Georgia *Aug 2020-present*

- Design homeworks and answer students' questions on their study of machine learning.
- Give them presentations about machine learning project and research to give them an example.
- Help them as possible as I can in machine learning study.

Researching Assistant, **Machine Learning & Computer Vision, SEU,** Nanjing, China *Oct. 2018-May. 2019*

- Read classical papers about machine learning and computer vision, such as CNN and RCNN, etc.
- Learnt basic structure and basic mathematical foundations in CNN algorithm. Utilized Python to study the traditional machine learning structures in computer vision like CNN, RCNN, etc.
- Made some minor modification towards SEU Robocup (Kidsize Group) programs.

Researching Assistant, **Belief Propagation, SEU & Intel** *Aug. 2018-July 2019*

- Learnt LDPC decoding, Polar decoding and belief propagation (BP) utilized in communication
- Simplified the factor graph of polar to be applied in BP algorithm
- Uniform the whole communication process in Belief Propagation.

Researching Assistant, **Lab of Efficient Architectures for Digital-communication and Signal-processing, National Mobile Communications Research Laboratory,** Nanjing, China *Oct. 2015-July 2019*

- Computed complicated arithmetic functions based on chemical reactions
- Designed a method of mapping fast convolution units into chemical reactions and published a conference paper
- Designed a method of realizing 1 or 2-dimensional large-scale data processing method in chemical reaction networks

TECHNICAL PROFICIENCIES & SKILLS

- **Programming Languages**: C/C++ (familiar), Python (familiar), Latex (familiar), MATLAB (familiar).
- **Deep Learning Frameworks:** Pytorch (familiar), Keras (familiar), Tensorflow.
- **Professional Knowledge**: Natural Language Processing, Machine Learning, Computer Vision, and Bio-chemical Computing.

CONFERENCES ATTENDED & TO ATTEND

Representative, **IEEE Workshop on Signal Processing Systems**, Cape Town, South Africa *Oct. 2018*

Excellent Paper Award and Representative, **The 11th ISIPS,** Japan *Nov. 2017*

Representative, **International Conference on Wireless Communications and Signal Processing,** Nanjing *Oct. 2017*

Representative, **Intel Collaborative Research Institutes on Mobile Networking and Computing Semi-Annual Meeting,** Yangzhou, China *Aug. 2017*

Attendee, **Workshop on Processing for Communication and Intelligent Information,** Shanghai, China *June 2017*

International Conference Paper Reviewer, **APCCAS, GLOBESIP, MWSCAS, PIMRC**

International Journal Paper Reviewer, **IEEE Journal on Selected Topics in Signal Processing (JSTSP)**