

Yuchen Zhuang

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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

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	Dec 2013;

Electrical and Computer Engineering, Georgia Institute of Technology

Master of Electrical and Computer Engineering Atlanta, Georgia Aug 2019-present

School of Information Science and Engineering, Southeast University (SEU)

Bachelor of Engineering in Information Technology Nanjing, China Sept 2015-July 2019

GPA: 88.16/100

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 and accomplish a generalized zero-shot learning setting on the generated dataset.
- Design abundant experiments and make submission targeting NAACL2021.

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 adversarial training methods 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.

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

PUBLICATIONS & PATENTS

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

1. **Zhuang, Y.**, Li, Y., Zhang, J., Kong, L., Zhang, C. (2020). Compositional Graphical Modular Network for Event Extraction on COVID-19 Related Tweets[C]. Paper targeting to make submission 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](https://doi.org/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](https://doi.org/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.

TECHNICAL PROFICIENCIES & SKILLS

- **Programming Languages:** C/C++ (familiar), Python (familiar), VHDL, Verilog
- **Software:** Mathematica, MATLAB, Latex, Microsoft software, NI Multisim, etc
- **Professional Knowledge:** Digital Signal Processing, Communication Systems, Digital and Analog Circuits, VLSI foundations, FPGA, Machine Learning Knowledge Basis, and Bio-chemical Computing.
- **Communication skills:** Good communication skills. Attended several international conferences and gave reports. Leader of certain research groups.

CONFERENCES ATTENDED & TO ATTEND

<i>Representative, IEEE Workshop on Signal Processing Systems, Cape Town, South Africa</i>	<i>Oct. 2018</i>
<i>Excellent Paper Award and Representative, The 11th ISIPS, Japan</i>	<i>Nov. 2017</i>
<i>Representative, International Conference on Wireless Communications and Signal Processing, Nanjing</i>	<i>Oct. 2017</i>
<i>Representative, Intel Collaborative Research Institutes on Mobile Networking and Computing Semi-Annual Meeting, Yangzhou, China</i>	<i>Aug. 2017</i>
<i>Attendee, Workshop on Processing for Communication and Intelligent Information, Shanghai, China</i>	<i>June 2017</i>
<i>International Conference Paper Reviewer, APCCAS, GLOBESIP, MWSCAS, PIMRC</i>	
<i>International Journal Paper Reviewer, IEEE Journal on Selected Topics in Signal Processing (JSTSP)</i>	