

TIANYI ZHANG

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EDUCATION

Cornell University, College of Arts and Sciences 2016.8 – 2019.12
 Major in Computer Science & College Scholar Program GPA: 3.99/4.3
 Honors & Awards: 2019/2020 CRA Outstanding Undergraduate Researcher Award Runner-up; Lynne S. Abel Fund; Einhorn Discovery Grant; Cornell Undergraduate Research Fund;

RESEARCH (sorted by time)

SWALP: Stochastic Weight Averaging for Low Precision Training [1] Published at ICML 2019
advised by Prof. Christopher De Sa *Second Author, Cited by 10*
 We investigate the combination of stochastic weight averaging and low-precision training. This algorithm displays better convergence behaviors and performs well on common benchmarks.

Simplifying Graph Convolutional Networks [2] Published at ICML 2019
advised by Prof. Kilian Weinberger *Co-First Author, Cited by 61*
 Our work simplifies Graph Convolutional Networks to a linear model. The resulting model achieves competitive performance while being up to two orders of magnitude faster. Moreover, the simplified model leads to a better theoretical understanding of graph convolutional models.

QPyTorch: A Low-Precision Arithmetic Simulation Framework [3] Published at NeurIPS 2019 Workshop
advised by Prof. Christopher De Sa, *First Author*
 We develop this open-source project to support the empirical research on low-precision training. QPyTorch can simulate various quantization strategies and integrates well with the cutting-edge research. Our software has been downloaded 5K+ times through PyPI.

BERTScore: Evaluating Text Generation with BERT [4] Published at ICLR 2020
advised by Prof. Kilian Weinberger and Prof. Yoav Artzi *Co-First Author, Cited by 21*
 We leverage contextual embeddings to develop an automatic evaluation metric for text generation. The proposed metric correlates highly with human judgments and is more robust to adversarial inputs. Our software has been downloaded 10K+ times through PyPI.

Detecting Label Noise from Loss Curves In Progress
advised by Prof. Kilian Weinberger *Second Author*
 We introduce a new method to discover mislabeled training samples and mitigate their impact on the training process of deep neural networks. Our method performs well on standard benchmarks and can be easily computed with a few lines of code.

Trend Detection In Progress
advised by Prof. Kilian Weinberger
 We develop a machine learning application to detect novel user behavior over time. Details under NDA.

EXPERIENCE

Research Engineer, supervised by Prof. Kilian Weinberger, ASAPP Inc. 2020.01 – Present
Research Intern, supervised by Prof. Kilian Weinberger, ASAPP Inc. 2019.03 – 2019.12
Student Volunteer, NeurIPS 2019 Conference 2019.12
Teaching Assistant, Introduction to Natural Language Processing 2018.08 – 2018.12

Publications

- [1] Guandao Yang, **Tianyi Zhang**, Polina Kirichenko, Junwen Bai, Andrew Gordon Wilson, and Chris De Sa. SWALP: Stochastic weight averaging in low precision training. In *Proceedings of the 36th International Conference on Machine Learning*, pages 7015–7024, 2019.
- [2] Felix Wu*, **Tianyi Zhang***, Amauri Souza*, Christopher Fifty, Tao Yu, and Kilian Weinberger. Simplifying graph convolutional networks. In *Proceedings of the 36th International Conference on Machine Learning*, pages 6861–6871, 2019.
- [3] **Tianyi Zhang**, Zhiqiu Lin, Guandao Yang, and Chris De Sa. QPyTorch: A low-precision arithmetic simulation framework. In *The 5th Workshop on Energy Efficient Machine Learning and Cognitive Computing, Co-located with the 33rd Conference on Neural Information Processing Systems*, 2019.
- [4] **Tianyi Zhang***, Varsha Kishore*, Felix Wu*, Kilian Weinberger, and Yoav Artzi. BERTScore: Evaluating text generation with BERT. In *International Conference on Learning Representations*, 2020.