

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: 4.0/4.3

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 9

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 52

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 15

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 8K+ 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 model to detect novel user behavior over time. Details under NDA.

EXPERIENCE

Research Intern, ASAPP Inc.

2019.03 – Present

Student Volunteer, NeurIPS 2019 Conference

2019.12

Teaching Assistant, Introduction to Natural Language Processing

2018.08 – 2018.12

References

- [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.