Guojun Zhang

Curriculum Vitae

Education

2017.09-Present **Ph.D. of Computer Science**, *University of Waterloo*, Waterloo, Canada (also affiliated with Vector Institute, Toronto), GPA – 94.43/100.
Supervisors: Pascal Poupart and Yaoliang Yu.

2015.08-2016.06 **Master of Physics**, *Perimeter Institute (affiliated with University of Waterloo)*, Waterloo, Canada, Perimeter Scholars International program.
Supervisor: Freddy Cachazo.

2011.09-2015.07 **Bachelor of Physics**, *Department of Modern Physics, University of Science and Technology of China*, Hefei, China, GPA – 4.13/4.3, Rank – 1/308.

Research Experience

2020.05-2020.10 **Research Scientist Intern**, NVIDIA Toronto AI Lab.
We study domain adaptation, including its generalization bound and optimization.

2020.03-2020.07 **Research Assistant**, *with* Zeou Hu, Kiarash Shaloudegi *and* Yaoliang Yu, University of Waterloo.
We propose a new algorithm for federated learning using multi-objective optimization called FedMGDA+, with features of robustness and fairness. This work is in collaboration with Kiarash from Huawei Montréal.

2019.09–Present **Research Assistant**, *with* Yaoliang Yu *and* Pascal Poupart, University of Waterloo.
We analyze optimality and stability in zero-sum min-max games, and propose efficient second-order methods for convergence to local optimal points.

2019.04–2019.09 **Research Assistant**, *with* Yaoliang Yu *and* Pascal Poupart, University of Waterloo.
We study convergence of gradient methods in bilinear min-max optimization, with applications in training generative models. This work is published at ICLR 2020.

2017.09–2019.04 **Research Assistant**, *with* Pascal Poupart, University of Waterloo.
We study the non-convex optimization of maximum likelihood in mixture models, in collaboration with George Trimponias from Noah's Ark Lab of Huawei in Hong Kong. This work is published at UAI 2019.

Teaching Experience

2020.09–2020.12 **Teaching Assistant**, *CS 480/680, Introduction to Machine Learning*, instructors: Pascal Poupart, University of Waterloo.
Marking and Protocoling.

+1 (226) 792 0887 • *g39zhang@uwaterloo.ca*
https://cs.uwaterloo.ca/~g39zhang/

2019.08–2019.12 **Teaching Assistant**, *CS 343, Concurrent and Parallel Programming*, instructors: Peter Buhr and Caroline Kierstead, University of Waterloo.
Marking and Protocoling.

2019.01–2019.04 **Teaching Assistant**, *CS 251, Computer Organization and Design*, instructors: Stephen Mann and Rosina Kharal, University of Waterloo.
Marking and Protocoling.

Research Interests

Min-max optimization, generative models, federated learning, domain adaptation

Awards

2020 **ICLR 2020 Travel Award**

2019 **NeurIPS 2019 Travel Award**

2019 **David R. Cheriton Scholarship** (2019-2021)

2015 **Guomoruo Scholarship**, the highest honor for a USTC undergrad

Computer skills

Python, C/C++, MATHEMATICA, Matlab/Octave, LaTeX

Selected Publications

In Computer Science:

2020.06 Zeou Hu, Kiarash Shaloudegi, Guojun Zhang and Yaoliang Yu. "FedMGDA+: Federated Learning meets Multi-objective Optimization." arXiv: 2006.11489.

2020.06 Guojun Zhang, Kaiwen Wu, Pascal Poupart and Yaoliang Yu. "Newton-type Methods for Minimax Optimization." arXiv: 2006.14592.

2020.04 Guojun Zhang and Yaoliang Yu. "Convergence of Gradient Methods on Bilinear Zero-Sum Games." ICLR 2020.

2020.02 Guojun Zhang, Pascal Poupart and Yaoliang Yu. "Optimality and Stability in Non-Convex Smooth Games." arXiv: 2002.11875.

2019.12 Guojun Zhang and Yaoliang Yu. "Convergence Behaviour of Some Gradient-Based Methods on Bilinear Zero-Sum Games." NeurIPS workshop 2019 (also presented at Edge Intelligence Workshop 2020).

2019.05 Guojun Zhang, P. Poupart and G. Trimponias. "Comparing EM with GD in Mixtures of Two Components." UAI 2019.

In Theoretical Physics:

2017.05 S. Mizera and Guojun Zhang (α-β order). "A String Deformation of the Parke-Taylor Factor" Phys. Rev. D 96(2017) no.6, 066016.

2016.12 H. Gomez, S. Mizera and Guojun Zhang (α-β order). "CHY Loop Integrands from Holomorphic Forms." JHEP 1703 (2017) 092.

+1 (226) 792 0887 • g39zhang@uwaterloo.ca
https://cs.uwaterloo.ca/~g39zhang/

2016.09 F. Cachazo, S. Mizera and Guojun Zhang (α-β order). "Scattering Equations: Real Solutions and Particles on a Line." JHEP 1703 (2017) 151.

2015.05 X. Wang, Guojun Zhang and M. x. Huang, "New Exact Quantization Condition for Toric Calabi-Yau Geometries." Phys. Rev. Lett. **115,** 121601 (2015).

2014.09 A. Faraggi, J. T. Liu, L. A. Pando Zayas and Guojun Zhang (α-β order), "One-loop structure of higher rank Wilson loops in AdS/CFT." Phys. Lett. B **740,** 218 (2015).

Conferences and Summer Schools

DLRL Summer School 2020, ICML 2020, ICLR 2020, NeurIPS 2019, UAI 2019, NeurIPS 2018

Academic Services

2020.10 AISTATS 2021 reviewer

2020.05 NeurIPS 2020 reviewer

2020.01 IJCAI/PRICAI 2020 program committee

+1 (226) 792 0887 • g39zhang@uwaterloo.ca
https://cs.uwaterloo.ca/~g39zhang/