Runtian Zhai

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Education

Carnegie Mellon University *Aug 2020 – May 2025 (expected)*
Ph.D. in Computer Science *Pittsburgh, PA, USA*
Co-advised by Zico Kolter and Pradeep Ravikumar
Research Focus: Representation Learning, Generalization Theory, Out-Of-Distribution Generalization

Peking University *Sep 2016 - Jul 2020*
Bachelor of Science (honor, double degree) *Beijing, China*
Majors: Computer Science, Applied Mathematics (Double major)
Member of PKU MOE Top-Notch Undergraduate Researcher Program
Research advised by Liwei Wang

Professional Experiences

Amazon Alexa AI *May 2022 – Aug 2022*
Applied Scientist Intern *Sunnyvale, CA, USA*

- Mentors: Aram Galstyan, Anoop Kumar, Stefan Schroedl
- Paper: *Online Continual Learning for Progressive Distribution Shift (OCL-PDS): A Practitioner's Perspective*

Microsoft Research Asia (MSRA) *Sep 2019 – Jun 2020*
Research Intern, Machine Learning Group *Beijing, China*

- Mentor: Di He
- Paper: *Transferred Discrepancy: Quantifying the Difference Between Representations*

UCLA *Jun 2019 – Sep 2019*
Research Assistant *Los Angeles, CA, USA*

- Advisor: Cho-Jui Hsieh
- Paper: *MACER: Attack-free and Scalable Robust Training via Maximizing Certified Radius*

Publications

Refereed Conference and Journal Publications

[1] Yuzhe Lu, Yilong Qin, **Runtian Zhai**, Andrew Shen, Ketong Chen, Zhenlin Wang, Soheil Kolouri, Simon Stepputtis, Joseph Campbell, Katia P. Sycara
Characterizing Out-of-Distribution Error via Optimal Transport
Neural Information Processing Systems, **(NeurIPS 2023)**

[2] Yash Gupta, **Runtian Zhai**, Arun Suggala, Pradeep Ravikumar
Responsible AI (RAI) Games and Ensembles
Neural Information Processing Systems, **(NeurIPS 2023)**

[3] **Runtian Zhai**, Chen Dan, Zico Kolter, Pradeep Ravikumar
Understanding Why Generalized Reweighting Does Not Improve Over ERM
International Conference on Learning Representations, **(ICLR 2023)**

[4] **Runtian Zhai**, Stefan Schroel, Aram Galstyan, Anoop Kumar, Greg Ver Steeg, Pradeep Natarajan
Online Continual Learning for Progressive Distribution Shift (OCL-PDS): A Practitioner's Perspective
International Conference on Learning Representations Workshop on Domain Generalization, **(ICLR 2023 DG Workshop)**

[5] Yuzhe Lu, Zhenlin Wang, **Runtian Zhai**, Soheil Kolouri, Joseph Campbell, Katia P. Sycara
Predicting Out-of-Distribution Error with Confidence Optimal Transport
International Conference on Learning Representations Workshop on Trustworthy Machine Learning, **(ICLR 2023 Trustworthy ML Workshop)**

[6] **Runtian Zhai**, Chen Dan, Arun Sai Suggala, Zico Kolter, Pradeep Ravikumar
Boosted CVaR Classification
Neural Information Processing Systems, **(NeurIPS 2021)**

[7] **Runtian Zhai***, Chen Dan*, Zico Kolter, Pradeep Ravikumar
DORO: Distributional and Outlier Robust Optimization
International Conference on Machine Learning, **(ICML 2021)**

[8] **Runtian Zhai***, Chen Dan*, Di He*, Huan Zhang, Liwei Wang, Pradeep Ravikumar, Boqing Gong, Cho-Jui Hsieh
MACER: Attack-free and Scalable Robust Training via Maximizing Certified Radius
International Conference on Learning Representations, **(ICLR 2020)**

Preprints

[1] **Runtian Zhai**, Bingbin Liu, Andrej Risteski, Zico Kolter, Pradeep Ravikumar
Understanding Augmentation-based Self-Supervised Representation Learning via RKHS Approximation
arXiv preprint, arXiv:2306.00788

[2] Yunzhen Feng*, **Runtian Zhai***, Di He, Liwei Wang, Bin Dong
Transferred Discrepancy: Quantifying the Difference Between Representations
arXiv preprint, arXiv:2007.12446

[3] **Runtian Zhai***, Tianle Cai*, Di He*, Chen Dan, Kun He, John E. Hopcroft, Liwei Wang
Adversarially Robust Generalization Just Requires More Unlabeled Data
arXiv preprint, arXiv:1906.00555

Honors and Awards

MOE Top-Notch Undergraduate Researcher Program, Peking University (20 students each year) *2019*
Changfei Scholarship for Outstanding Students, Peking University (top 5%) *2017*

Teaching

CMU 10-701: Introduction to Machine Learning *Fall 2022*

- **Head TA**: Assignments, recitals and exams preparation, project mentoring, office hours
- One mentored project converted into a NeurIPS publication [1]

Professional Activities

Conference Reviewer

- International Conference on Learning Representations (ICLR) *2023-2024*
- International Conference on Artificial Intelligence and Statistics (AISTATS) *2023-2024*
- Neural Information Processing Systems (NeurIPS) *2022-2023*
- International Conference on Machine Learning (ICML) *2022-2023*
- SIAM International Conference on Data Mining (SDM) *2024*
- International Conference on Computer Vision (ICCV) *2023*
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining *2023*

Journal Reviewer

- Journal of Machine Learning Research (JMLR)