

# Runtian Zhai

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## EDUCATION

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### Carnegie Mellon University, Pittsburgh, PA, USA

*Ph.D. Student at Computer Science Department*

*Aug 2020 - May 2025 (expected)*

- Co-advised by Zico Kolter and Pradeep Ravikumar.
- Research focus: Distributional shift in machine learning, domain adaptation/generalization, continual learning, algorithmic fairness, long-tailed learning, optimization and generalization theory.

### Peking University, Beijing, China

*Bachelor of Science (honor, double degree)*

*Sep 2016 - Jul 2020*

- Major in Computer Science. Major GPA: 3.75/4.0
- Double major in Applied Mathematics. Major GPA: 3.57/4.0

## SKILLS

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- Over 200k lines of code in Python and PyTorch. Also familiar with Tensorflow and Keras.
- Programming Languages: Python, C/C++, MATLAB, HTML/CSS/JS, PHP.

## SELECTED PUBLICATIONS AND PREPRINTS

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**R. Zhai**, C. Dan, J.Z. Kolter, P. Ravikumar. *Understanding Why Generalized Reweighting Does Not Improve Over ERM*. Preprint, arXiv: 2201.12293.

**R. Zhai**, C. Dan, A.S. Suggala, J.Z. Kolter, P. Ravikumar. *Boosted CVaR Classification*. NeurIPS 2021.

**R. Zhai\***, C. Dan\*, J.Z. Kolter, P. Ravikumar. *DORO: Distributional and Outlier Robust Optimization*. ICML 2021.

**R. Zhai\***, C. Dan\*, D. He\*, H. Zhang, L. Wang, P. Ravikumar, B. Gong, C.J. Hsieh. *MACER: Attack-free and Scalable Robust Training via Maximizing Certified Radius*. ICLR 2020.

**R. Zhai\***, T. Cai\*, D. He\*, C. Dan, K. He, J.E. Hopcroft, L. Wang. *Adversarially Robust Generalization Just Requires More Unlabeled Data*. Preprint, arXiv: 1906.00555.

## EMPLOYMENT

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### Amazon Alexa AI

*Applied Scientist Intern. Managers: Stefan Schroedl, Pradeep Natarajan.*

*May 2022 - Aug 2022*

- Studied the distribution shift and model drift problems in real industrial applications.

### Microsoft Research Asia (MSRA)

*Research Intern in Machine Learning (ML) Group. Mentor: Di He.*

*Sep 2019 - Jun 2020*

- Conducted research on adversarial robustness, semi-supervised learning and transfer learning.

## RESEARCH EXPERIENCE

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## **Peking University**

*Research Assistant. Advisor: Professor Liwei Wang.*

*Jul 2018 - Jun 2020*

- Studied adversarial training in the semi-supervised setting. Proposed a robust training algorithm that learns with unlabeled data.

## **University of California, Los Angeles**

*Research Assistant. Advisor: Professor Cho-Jui Hsieh.*

*Feb 2019 - Sep 2019*

- Studied adversarial robustness certification of neural networks. Proposed MACER, an attack-free and scalable provable adversarial defense that trains provable  $l_2$ -robust models.

## **HONORS AND AWARDS**

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- Member of PKU MOE Top-Notch Undergraduate Program (20/350 students a year) *May 2019*
- Changfei Scholarship for Outstanding Students at PKU (top 5%) *Sep 2017*