

## EDUCATION

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### Rice University

Ph.D. in Computer Science

– Advisor: **Professor Maryam Aliakbarpour**

Houston, TX

Expected May 2029

### Boston University, *Cum Laude*

M.A. in Mathematics

– Advisor: **Professor Mark Kon**

– Thesis: Efficiently Approximate the Attention Computation Problem Through the Softmax Regression ([Link](#))

B.A. in Mathematics

– Graduate with honors

– Thesis: Juliabulb, Mandelbulb, and Logisticbulb ([Link](#))

B.A. in Philosophy and Religion

Boston, MA

May 2024

May 2024

May 2024

## RESEARCH INTERESTS

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Numerical Linear Algebra, Theoretical Machine Learning, Large Language Models, and Robust Statistics

## EXPERIENCES

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### • Simons Institute for the Theory of Computing

– *Visiting Student*

– Federated and Collaborative Learning program

January - May 2026

### • Boston University

– *Research Assistant*

– Advisors: Professor Mark Kon and Professor Julio Castrillon

October 2023 - May 2024

### • IDG Capital

– *Research Scientist Internship*

May - June 2023

### • Boston University

– *Undergraduate Research Assistant*

– Advisor: Professor Emma Previato

– Supported by the Undergraduate Research Opportunities Program (UROP) at Boston University

June - August 2022

### • Boston University

– *Undergraduate Research Assistant*

– Advisor: Professor Emma Previato

– Supported by the Undergraduate Research Opportunities Program (UROP) at Boston University

June - August 2021

## PUBLICATIONS

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### Author names in alphabetical order:

1. Yuzhou Gu, Zhao Song, and **Junze Yin**. “Binary Hypothesis Testing for Softmax Models and Leverage Score Models.” In the 42nd International Conference on Machine Learning (ICML 2025). ([Paper Link](#))
  2. Zhao Song, Chongxi Wang, Guangyi Xu, and **Junze Yin**. “The expressibility of polynomial based attention scheme.” In the 31st International Conference on Knowledge Discovery and Data Mining (KDD 2025). ([Paper Link](#))
  3. Jiehao Liang, Zhao Song, Zhaozhuo Xu, **Junze Yin**, and Danyang Zhuo. “Dynamic maintenance of kernel density estimation data structure: From practice to theory.” In the 41st Conference on Uncertainty in Artificial Intelligence (UAI 2025). ([Paper Link](#))
  4. Yeqi Gao, Zhao Song, Weixin Wang, and **Junze Yin**. “A fast optimization view: reformulating single layer attention in LLM based on tensor and svm trick, and solving it in matrix multiplication time.” In the 41st Conference on Uncertainty in Artificial Intelligence (UAI 2025). ([Paper Link](#))
  5. Zhao Song, Weixin Wang, Chenbo Yin, **Junze Yin**. “Fast and efficient matching algorithm with deadline instances.” In the 2nd Conference on Parsimony and Learning (CPAL 2025). ([Paper Link](#))
  6. Zhao Song, Mingquan Ye, **Junze Yin**, Lichen Zhang. “Efficient alternating minimization with applications to weighted low rank approximation.” In the 13th International Conference on Learning Representations (ICLR 2025). ([Paper Link](#))
  7. Yeqi Gao, Zhao Song, **Junze Yin**. “An iterative algorithm for rescaled hyperbolic functions regression.” In the 28th International Conference on Artificial Intelligence and Statistics (AISTATS 2025). ([Paper Link](#))
  8. Zhao Song, **Junze Yin**, Ruizhe Zhang. “Revisiting quantum algorithms for linear regressions: quadratic speedups without data-dependent parameters.” In the 28th Quantum Information Processing Conference (QIP 2025). ([Paper Link](#))
  9. Zhao Song, **Junze Yin**, Lichen Zhang, and Ruizhe Zhang. “Fast dynamic sampling for determinantal point processes.” In the 27th International Conference on Artificial Intelligence and Statistics (AISTATS 2024). ([Paper Link](#))
  10. Zhao Song, **Junze Yin**, and Lichen Zhang. “Solving attention kernel regression problem via pre-conditioner.” In the 27th International Conference on Artificial Intelligence and Statistics (AISTATS 2024). ([Paper Link](#))
  11. Yuzhou Gu, Zhao Song, **Junze Yin**, and Lichen Zhang. “Low rank matrix completion via robust alternating minimization in nearly linear time.” In the 12th International Conference on Learning Representations (ICLR 2024). ([Paper Link](#))
  12. **Junze Yin**. “Dynamical fractal: Theory and case study.” Chaos, Solitons & Fractals 2023. ([Paper Link](#))
  13. Zhao Song, Mingquan Ye, **Junze Yin**, and Lichen Zhang. “A nearly-optimal bound for fast regression with  $\ell_\infty$  guarantee.” In the 40th International Conference on Machine Learning (ICML 2023). ([Paper Link](#))
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14. Haochen Zhang, **Junze Yin**, Guanchu Wang, Zirui Liu, Lin Yang, Tianyi Zhang, Anshumali Shrivastava, Vladimir Braverman. “Breaking the Frozen Subspace: Importance Sampling for Low-Rank Optimization in LLM Pretraining.” In the 39th Annual Conference on Neural Information Processing Systems (NeurIPS 2025). ([Paper Link](#))
  15. Haochen Zhang, Tianyi Zhang, **Junze Yin**, Oren Gal, Anshumali Shrivastava, Vladimir Braverman. “CoVE: Compressed Vocabulary Expansion Makes Better LLM-based Recommender Systems.” In the 63rd Annual Meeting of the Association for Computational Linguistics (ACL 2025 Findings). ([Paper Link](#))

### Theses:

1. **Junze Yin**. “Efficiently approximate the attention computation problem through the softmax regression.” Master’s Thesis. Boston University (2024). ([Paper Link](#))
2. **Junze Yin**. “Juliabulb, mandelbulb, and logisticbulb.” Undergraduate Thesis. Boston University (2022). ([Paper Link](#))

## SERVICES

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- **Conference reviewer:** AISTATS 2026, ICLR 2026, KDD 2026, FLLM 2025, NeurIPS 2025, IJCAI 2025, COLM 2025, KDD 2025, AISTATS 2025, ICLR 2025, NeurIPS 2024, AISTATS 2024, FLLM 2024.
- **Journal reviewer:** PLOS ONE.

## AWARDS AND SCHOLARSHIPS

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- **Geyer-Vardi Scholar** - Department of Computer Science, *Rice University* March 2024
- **Student Research Award** - Undergraduate Research Opportunities Program, *Boston University* June 2022
- **Student Research Award** - Undergraduate Research Opportunities Program, *Boston University* June 2021
- **Travel Awards**, *Boston University* March 2024, February 2022, December 2021, July 2021

## TEACHINGS

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- **Teaching Assistant** in Reasoning about Algorithms, Rice University August 2025 - December 2025  
– Instructors: Konstantinos Mamouras, Maryam Aliakbarpour, and Anjum Chida
- **Teaching Assistant** in Graduate Design and Analysis of Algorithms, Rice University January 2025 - May 2025  
– Instructor: Nai-Hui Chia
- **Peer Tutor** for the Education Resource Center, Boston University February 2021 - May 2024