Junze Yin

GitHub
jy158@rice.edu
Google Scholar
Personal Website

Education

Rice University Houston, TX
Ph.D. in Computer Science Expected May 2029
– Advisor: **Professor Maryam Aliakbarpour**

Boston University, *Cum Laude* Boston, MA
M.A. in Mathematics May 2024
– Advisor: **Professor Mark Kon**
– Thesis: Efficiently Approximate the Attention Computation Problem Through the Softmax Regression (Link)
B.A. in Mathematics May 2024
– Graduate with honors
– Thesis: Juliabulb, Mandelbulb, and Logisticbulb (Link)
B.A. in Philosophy and Religion May 2024

Research Interests

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

Publications

Author names in alphabetical order:

1. Maryam Aliakbarpour, Vladimir Braverman, **Junze Yin**, and Haochen Zhang. "Support Basis: Fast Attention Beyond Bounded Entries." In the 29th International Conference on Artificial Intelligence and Statistics (AISTATS 2026). **Selected for Spotlight Presentation (top 3% of submissions)**. (Paper Link)
2. 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)
3. 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)
4. 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)
5. 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)
6. 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)
7. 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)
8. 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)

9. 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)

10. 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)

11. 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)

12. 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)

13. **Junze Yin**. "Dynamical fractal: Theory and case study." Chaos, Solitons & Fractals 2023. (Paper Link)

14. Zhao Song, Mingquan Ye, **Junze Yin**, and Lichen Zhang. "A nearly-optimal bound for fast regression with ℓ_∞ guarantee." In the 40th International Conference on Machine Learning (ICML 2023). (Paper Link)

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15. 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)

16. 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)

Experiences

- **Simons Institute for the Theory of Computing** (Upcoming) January - May 2026
  - *Visiting Graduate Student*
  - Federated and Collaborative Learning program
- **Boston University** October 2023 - May 2024
  - *Research Assistant*
  - Advisors: Professor Mark Kon and Professor Julio Castrillon
- **IDG Capital** May - June 2023
  - *Research Scientist Internship*
- **Boston University** June - August 2022
  - *Undergraduate Research Assistant*
  - Advisor: Professor Emma Previato
  - Supported by the Undergraduate Research Opportunities Program (UROP) at Boston University
- **Boston University** June - August 2021
  - *Undergraduate Research Assistant*
  - Advisor: Professor Emma Previato
  - Supported by the Undergraduate Research Opportunities Program (UROP) at Boston University

Services

- **Conference reviewer**: KDD 2026 (Second Cycle), ICML 2026, AISTATS 2026, ICLR 2026, KDD 2026 (First Cycle), FLLM 2025, NeurIPS 2025, IJCAI 2025, COLM 2025, KDD 2025 (Second Cycle), AISTATS 2025, ICLR 2025, NeurIPS 2024, AISTATS 2024, FLLM 2024.
- **Journal reviewer**: PLOS ONE, Journal of Applied Physics.

Awards and Scholarships

- **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

- **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