

YUANHE ZHANG

Department of Statistics, University of Warwick, UK

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Research Interests

I'm broadly interested in the foundations of large language models (LLMs) from the perspective of learning efficiency. Theoretically, my research aims to uncover the statistical and computational principles underlying post-training adaptation and inference-time reasoning; Empirically, I develop and analyze efficient, theory-grounded algorithms that enhance the performance of LLMs in practice.

Education

Univeristy of Warwick

Department of Statistics

Sept. 2024 - Present

Coventry, United Kingdom

- Ph.D. in Statistics
- Supervisor: [Dr. Fanghui Liu](#), [Dr. Thomas Berrett](#), and [Prof. Chenlei Leng](#) (previously)
- Title: On Statistical Foundations of Post-Training and Inference-Time Computation of LLMs
- Fully Funded by Chancellor's International Scholarship

Univeristy of Warwick

Department of Statistics

Sept. 2020 - Jun. 2024

Coventry, United Kingdom

- Integrated Bachelor and Master in Mathematics and Statistics (MMathStat)
- High 1st class, 82% average across four years
- Top 1 student of 23-24 fourth year cohort, 92.4% average.

Selected Honors and Awards

Statistics Prize (£500)

2024

- Awarded to the top 1 student in the cohort

Academic Excellence Prize (£400)

2023

- Awarded to the top 10 student in the cohort

Statistics Senior Scholarship (£2600)

2023

- Awarded to the student with high distinction

Warwick Undergraduate Research Support Scheme (URSS) (£1500)

2023

- Funded summer undergraduate research by Warwick

Publications

Preprints and submitted papers

Yuanhe Zhang, Ilja Kuzborskij, Jason D. Lee, Chenlei Leng, Fanghui Liu. *DAG-Math: Graph-Guided Mathematical Reasoning in LLMs*. (under review of ICLR'26)[Code]

Published or accepted papers

Yuanhe Zhang, Fanghui Liu, and Yudong Chen. *LoRA-One: One-Step Full Gradient Could Suffice for Fine-Tuning Large Language Models, Provably and Efficiently*. International Conference on Machine Learning (ICML), 2025. (Oral) [Code][Website]

David Huk, **Yuanhe Zhang**, Mark Steel, and Ritabrata Dutta. *Quasi-Bayes meets Vines*. Advances in Neural Information Processing Systems (NeurIPS), 2024. [[Code](#)]

Research Experience

Research Intern

Jun. 2023 - Oct. 2023

Department of Statistics, Univeristy of Warwick

- Project title: Generalized martingale posterior predictive recursive algorithms via neural spline flows
- Supervisor: **Dr. Ritabrata Dutta**
- Fully funded by Undergraduate Research Support Scheme
- Generalized a state-of-art stochastic approximation algorithm for Dirichlet Process Mixture Model called martingale posterior recursive update, which can provide fast and efficient online density updating using a fixed bivariate gaussian copula.

Summer Research Student

Jul. 2022 - Aug. 2022

Department of Physics, University of Bristol

- Project title: Dynamic graph convolutional neural network for signals selection at the Level-1 Trigger
- Supervisor: **Dr. Sudarshan Paramesvaran**
- Proposed a graph-based convolutional neural network for collision event particles signals classification.

Teaching Experience

Graduate Teaching Assistant, University of Warwick

- [CS416 Optimization methods](#) (2024-2025)

Professional Service

- Conference Reviewers: NeurIPS, ICLR
- Workshop Volunteer
- ◇ NeurIPS 2024 workshop: [Fine-Tuning in Modern Machine Learning: Principles and Scalability](#)