

OVERVIEW

I am a Statistics Ph.D. student at The University of Texas at Austin. My research focus has primarily been on probabilistic models and optimal transport.

EXPERIENCE

The Univeristy of Texas at Austin

Texas, USA

Graduate Research Assistant

September, 2022 –Present

- Research topics: Large-scale Optimal Transport in Machine Learning.

AT&T Labs

Texas, USA

Research Intern

June, 2022 –August, 2022

- Research topics: User Browsing Behavior Analysis, Co-clustering.
- Proposed and implemented clustering algorithms in PySpark on DataBricks.

VinAI Research

Hanoi, Vietnam

AI Research Resident

2019 –2021

- Research topics: Deep Generative Models, Optimal Transport.
- Advisor: Dr. Hung Bui (Director of VinAI Research).
- Did research on Deep Generative Models (VAEs, GANs, Score matching models) and improved them with Optimal Transport (sliced Wasserstein distance, Sinkhorn divergence).

Data Science Laboratory (HUST)

Hanoi, Vietnam

Undergraduate Research Student

2018–2020

- Research topics: Probabilistic Graphical Model, Continual Learning.
- Applied continual learning techniques to Variational Inference, maximum likelihood estimators, and so on.

EDUCATION

The University of Texas at Austin

Texas, USA

Ph.D. in Statistics at Department of Statistics and Data Sciences

2021–Present

- Expected graduation date: June, 2026.
- GPA: 3.95/4.0.
- Advisors: Professor Nhat Ho.

Hanoi University of Science and Technology (HUST)

Hanoi, Vietnam

B.Sc in Computer Science (5 years program)

2015–2020

- GPA: 3.61/4.00, Major GPA: 3.71/4.00, Top: 1%, graduated with Excellent Degree.
- Thesis: “Distributional Sliced-Wasserstein and Applications to Generative Modeling”.

PUBLICATIONS

1. Revisiting Sliced Wasserstein on Images: From Vectorization to Convolution

Khai Nguyen, Nhat Ho

– *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS 2022)*.

2. Amortized Projection Optimization for Sliced Wasserstein Generative Models

Khai Nguyen, Nhat Ho

– *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS 2022)*.

3. Transformer with Fourier Integral Attentions

Tan Nguyen, Minh Pham, Tam Nguyen, **Khai Nguyen**, Stanley Osher, Nhat Ho

– *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS 2022)*.

4. Improving Transformer with an Admixture of Attention Heads

Tan Nguyen, Tam Nguyen, Hai Do, **Khai Nguyen**,

Vishwanath Saragadam, Minh Pham, Khuong Nguyen, Nhat Ho, Stanley Osher

– *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS 2022)*.

5. Improving Mini-batch Optimal Transport via Partial Transportation

Khai Nguyen, Dang Nguyen, Tung Pham, Nhat Ho

– *International Conference on Machine Learning (ICML 2022)*.

6. On Transportation of Mini-batches: A Hierarchical Approach

Khai Nguyen, Dang Nguyen, Quoc Nguyen, Tung Pham, Hung Bui, Dinh Phung, Trung Le, Nhat Ho

– *International Conference on Machine Learning (ICML 2022)*.

7. On Multimarginal Partial Optimal Transport: Equivalent Forms and Computational Complexity

Huy Nguyen, Khang Le, **Khai Nguyen**, Tung Pham, Nhat Ho

– *International Conference on Artificial Intelligence and Statistics (AISTATS 2022)*.

8. Structured Dropout Variational Inference for Bayesian Neural Networks

Son Nguyen, Duong Nguyen, **Khai Nguyen**, Khoat Than, Hung Bui, Nhat Ho

– *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS 2021)*.

9. Improving Relational Regularized Autoencoders with Spherical Sliced Fused Gromov Wasserstein

Khai Nguyen, Son Nguyen, Nhat Ho, Tung Pham, Hung Bui

– *International Conference on Learning Representations (ICLR) 2021*.

10. Distributional Sliced-Wasserstein and Applications to Generative Modeling

Khai Nguyen, Nhat Ho, Tung Pham, Hung Bui

– *International Conference on Learning Representations (ICLR) 2021 (Spotlight 3.8%)*.

SUBMISSIONS

11. Hierarchical Sliced Wasserstein Distances

Khai Nguyen, Tongzheng Ren, Huy Nguyen, Litu Rout, Tan Nguyen, Nhat Ho

– *Under review*.

12. Model Fusion of Heterogeneous Neural Networks via Cross-Layer Alignment

Dang Nguyen, **Khai Nguyen**, Dinh Phung, Hung Bui, Nhat Ho

– *Under review*.

PROFESSIONAL SERVICES

- Reviewer at Journal of Machine Learning Research (JMLR).
- Reviewer at International Conference on Machine Learning (ICML) 2021, 2022.
- Reviewer at Conference on Neural Information Processing Systems (NeurIPS) 2021, 2022.
- Reviewer at Workshop on Deep Generative Models (NeurIPS) 2021.
- Reviewer at International Conference on Learning Representations (ICLR) 2022, 2023.
- Reviewer at International Conference on Artificial Intelligence and Statistics (AISTATS) 2022.
- Reviewer at AAAI Conference on Artificial Intelligence (AAAI) 2023.

AWARDS

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| • ICML Participation Grants (about 2,000\$). | 2022 |
| • Doctoral Fellowship of The University of Texas at Austin (about 30,000\$). | 2021 |
| • Third Prize of Scientific Research Student Award of Hanoi University of Science and Technology. | 2019 |

TECHNICAL SKILLS

- **Python:** Proficient.
Libraries: Pytorch (proficient), Tensorflow (basic), Scikit-Learn (proficient), Numpy (proficient), Pandas (basic), Matplotlib (proficient), Pyspark (basic), and so on.
- **Java:** Basic.
- **C/C++:** Basic.
- **Developer Tools:** Git.
- **Systems:** Linux.