Khai Nguyen

Email: khainb@utexas.edu
Website: khainb.com
Contact: (+1) 7733976698

OVERVIEW

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

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".

EMPLOYMENT

The Univeristy of Texas at Austin   Texas, USA
Graduate Research Assistant   September, 2022 –Present

- Research topics: Random projections for probability measures, 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 co-clustering algorithms to analysis user browsing behavior 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, diffusion 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 (online learning) techniques to variational inference, maximum likelihood estimators, and so on.

PUBLICATIONS

(*) denotes equal contribution

1. **K. Nguyen** and N. Ho, "Revisiting sliced Wasserstein on images: From vectorization to convolution", *Advances in Neural Information Processing Systems*, 2022.

2. **K. Nguyen** and N. Ho, "Amortized projection optimization for sliced Wasserstein generative models", *Advances in Neural Information Processing Systems*, 2022.

3. T. Nguyen, M. Pham, T. Nguyen, **K. Nguyen**, S. J. Osher, and N. Ho, "Transformer with Fourier integral attentions", *Advances in Neural Information Processing Systems*, 2022.

4. T. Nguyen, T. Nguyen, H. Do, **K. Nguyen**, V. Saragadam, M. Pham, K. Nguyen, N. Ho, and S. J. Osher, "Improving transformer with an admixture of attention heads", *Advances in Neural Information Processing Systems*, 2022.

5. **K. Nguyen***, D. Nguyen*, T. Pham, and N. Ho, "Improving mini-batch optimal transport via partial transportation", in *Proceedings of the 39th International Conference on Machine Learning*, 2022.

6. **K. Nguyen**, D. Nguyen, Q. Nguyen, T. Pham, H. Bui, D. Phung, T. Le, and N. Ho, "On transportation of mini-batches: A hierarchical approach", in *Proceedings of the 39th International Conference on Machine Learning*, 2022.

7. K. Le, H. Nguyen, **K. Nguyen**, T. Pham, and N. Ho, "On multimarginal partial optimal transport: Equivalent forms and computational complexity", in *International Conference on Artificial Intelligence and Statistics*, PMLR, 2022, pp. 4397–4413.

8. S. Nguyen, D. Nguyen, **K. Nguyen**, K. Than, H. Bui, and N. Ho, "Structured dropout variational inference for bayesian neural networks", *Advances in Neural Information Processing Systems*, vol. 34, pp. 15 188–15 202, 2021.

9. **K. Nguyen**, N. Ho, T. Pham, and H. Bui, "Distributional sliced-Wasserstein and applications to generative modeling", in *International Conference on Learning Representations*, 2021.

10. **K. Nguyen**, S. Nguyen, N. Ho, T. Pham, and H. Bui, "Improving relational regularized autoencoders with spherical sliced fused Gromov-Wasserstein", in *International Conference on Learning Representations*, 2021.

SUBMISSIONS

(*) denotes equal contribution

1. **K. Nguyen**, T. Ren, H. Nguyen, L. Rout, T. Nguyen, and N. Ho, "Hierarchical sliced Wasserstein distance", *arXiv preprint arXiv:2209.13570*, 2022.

2. D. Le*, H. Nguyen*, **K. Nguyen***, T. Nguyen, and N. Ho, "Fast approximation of the generalized sliced-Wasserstein distance", *arXiv preprint arXiv:2210.10268*, 2022.

3. X. Han, T. Ren, T. M. Nguyen, **K. Nguyen**, J. Ghosh, and N. Ho, "Robustify Transformers with robust kernel density estimation", *arXiv preprint arXiv:2210.05794*, 2022.

4. D. Nguyen, **K. Nguyen**, D. Phung, H. Bui, and N. Ho, "Model fusion of heterogeneous neural networks via cross-layer alignment", *arXiv preprint arXiv:2110.15538*, 2021.

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 (top reviewer).
- 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

- NeurIPS 2022 Scholar Award (about 2,000$).   2022
- ICML Participation Grants (about 2,000$).   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.