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: 3.97/4.0.
- 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 analyze 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**, T. Ren, H. Nguyen, L. Rout, T. Nguyen, and N. Ho, "Hierarchical sliced Wasserstein distance", *International Conference on Learning Representations*, 2023.
2. D. Nguyen, T. Nguyen, **K. Nguyen**, D. Phung, H. Bui, and N. Ho, "Model fusion of heterogeneous neural networks via cross-layer alignment", *IEEE International Conference on Acoustics, Speech and Signal Processing*, 2023.
3. **K. Nguyen** and N. Ho, "Revisiting sliced Wasserstein on images: From vectorization to convolution", *Advances in Neural Information Processing Systems*, 2022.
4. **K. Nguyen** and N. Ho, "Amortized projection optimization for sliced Wasserstein generative models", *Advances in Neural Information Processing Systems*, 2022.
5. 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.
6. 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.
7. **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.
8. **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.
9. 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.
10. 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.
11. **K. Nguyen**, N. Ho, T. Pham, and H. Bui, "Distributional sliced-Wasserstein and applications to generative modeling", in *International Conference on Learning Representations*, 2021.
12. **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, and N. Ho, "Markovian sliced Wasserstein distances: Beyond independent projections", *arXiv preprint arXiv:2301.03749*, 2023.
2. **K. Nguyen***, D. Nguyen*, and N. Ho, "Self-attention amortized distributional projection optimization for sliced Wasserstein point-clouds reconstruction", *arXiv preprint arXiv:2301.04791*, 2023.

3. 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.

4. 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.

5. N. Ho, D. Do, H. Nguyen, and **K. Nguyen**, "Optimal rate for parameter estimation in matrix-variate deviated models", *arXiv preprint arXiv:2301.11808*, 2023.

6. H. Nguyen, **K. Nguyen**, and N. Ho, "On parameter estimation in deviated gaussian mixture of experts", *Under Review*, 2023.

Professional services

- Reviewer at Journal of Machine Learning Research (JMLR).
- Reviewer at Machine Learning Journal.
- Reviewer at International Conference on Machine Learning (ICML) 2021, 2022, 2023.
- 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, 2023.
- Reviewer at AAAI Conference on Artificial Intelligence (AAAI) 2023.
- Reviewer at IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR) 2023.
- Reviewer at International Conference on Computer Vision (ICCV) 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.