Khai Nguyen

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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: 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 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

- **K. Nguyen** and N. Ho, "Revisiting sliced Wasserstein on images: From vectorization to convolution", *Advances in Neural Information Processing Systems*, 2022.
- **K. Nguyen** and N. Ho, "Amortized projection optimization for sliced Wasserstein generative models", *Advances in Neural Information Processing Systems*, 2022.
- 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.
- 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.
- **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.
- **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.
- 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.
- 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.
- **K. Nguyen**, N. Ho, T. Pham, and H. Bui, "Distributional sliced-Wasserstein and applications to generative modeling", in *International Conference on Learning Representations*, 2021.
- **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

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. 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.
- 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

- 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.