TrungTin Nguyen

Short Curriculum Vitae

Postdoctoral Research Fellow
The University of Queensland
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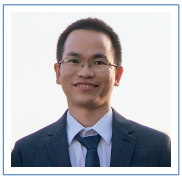
Long CV Version, October 22, 2024



Academic Appointment

2023–present **Postdoctoral Research Fellow**, *School of Mathematics and Physics*, *The University of Queensland*, Brisbane, Australia.

2022–2023 **Postdoctoral Research Fellow**, *Statify Team*, *Inria centre at the University Grenoble Alpes*, *MIAI Grenoble Alpes*, Grenoble, France.

Tertiary Education

2019–2022 **Doctor of Philosophy**, *Normandie Université*, Caen, France.
Major in Statistics and Data Science.

2017–2019 **Master of Science, Technology and Health**, *Université d'Orléans*, Orléans, France, GPA: 18/20.
Mention: *Très Bien*. Major in Applied Mathematics.

2013–2017 **Bachelor of Science**, *Vietnam National University-Ho Chi Minh Univeristy of Science (VNU-HCM)*, Ho Chi Minh City, Vietnam, GPA: 9.17/10. Rank: 2/1557, Summa Cum Laude.
Honors Program in Mathematics and Computer Science. Major in Probability and Statistics.

Research Interests

Statistical learning Model selection, simulation-based inference, Bayesian nonparametrics, high-dimensional statistics, uncertainty estimation, missing data.

Machine learning Supervised learning, unsupervised learning, reinforcement learning, structured prediction.

Optimization Robust and effective optimization algorithms for mixture models, difference of convex algorithm, optimal transport.

Applications Natural language processing, remote sensing, signal processing, biostatistics, computer vision, quantum chemistry, drug discovery, materials science.

Selected Publications

Total **6 Peer-reviewed Journal Publications** (Electronic Journal of Statistics, Statistics and Computing, Journal of Nonparametric Statistics, Communications in Statistics - Theory and Methods) + **13 Peer-reviewed Conference Publications** (3 ICML, 2 NeurIPS (1 Spotlight), 1 AISTATS, 1 IJCNN, 1 AJCAI) + **6 Preprints**.

Deep neural networks

2024 Hoai-Chau Tran, Duy MH Nguyen, Manh-Duy Nguyen, **TrungTin Nguyen**, Ngan Hoang Le, Pengtao Xie, Daniel Sonntag, James Zou, Binh T. Nguyen, and Mathias Niepert. Accelerating Transformers with Spectrum-Preserving Token Merging. In ***Advances in Neural Information Processing Systems, NeurIPS 2024,*** *Acceptance rate 25.8% over 15671 submissions*, December 2024.

2024 Quang Pham, Giang Do, Huy Nguyen, **TrungTin Nguyen**, Chenghao Liu, Mina Sartipi, Binh T Nguyen, Savitha Ramasamy, Xiaoli Li, Steven Hoi, and Nhat Ho. CompeteSMoE–Effective Training of Sparse Mixture of Experts via Competition. *arXiv preprint arXiv:2402.02526*, 2024.

2024 Duy MH Nguyen, Nina Lukashina, Tai Nguyen, An T Le, **TrungTin Nguyen**, Nhat Ho, Jan Peters, Daniel Sonntag, Viktor Zaverkin, and Mathias Niepert. Structure-Aware E(3)-Invariant Molecular Conformer Aggregation Networks. In ***Proceedings of the 41st International Conference on Machine Learning, ICML 2024***, *Acceptance rate 27.5% over 9,473 submissions*, July 2024.

2024 Duy M. H. Nguyen, Nghiem T. Diep, Trung Q. Nguyen, Hoang-Bao Le, Tai Nguyen, Tien Nguyen, **Nguyen, TrungTin**, Nhat Ho, Pengtao Xie, Roger Wattenhofer, James Zhou, Daniel Sonntag, and Mathias Niepert. LoGra-Med: Long Context Multi-Graph Alignment for Medical Vision-Language Model. *arXiv preprint arXiv:2410.02615*, Oct 2024.

2023 Truong Giang Do, Huy Khiem Le, Quang Pham, **TrungTin Nguyen**, Binh T. Nguyen, Thanh-Nam Doan, Chenghao Liu, Savitha Ramasamy, Xiaoli Li, and Steven HOI. HyperRouter: Towards Efficient Training and Inference of Sparse Mixture of Experts. In ***Proceedings of the 2023 Empirical Methods in Natural Language Processing, EMNLP 2023 Main,*** *Acceptance rate 14% over 1041 submissions*, December 2023.

Asymptotic Statistics

2024 Jacob Westerhout, **TrungTin Nguyen**, Xin Guo, and Hien Duy Nguyen. On the Asymptotic Distribution of the Minimum Empirical Risk. In ***Proceedings of the 41st International Conference on Machine Learning, ICML 2024***, *Acceptance rate 27.5% over 9,473 submissions*, July 2024.

Approximation capabilities and convergence rates of the mixture of experts models

2024 Huy Nguyen, **TrungTin Nguyen**, Khai Nguyen, and Nhat Ho. Towards Convergence Rates for Parameter Estimation in Gaussian-gated Mixture of Experts. In ***Proceedings of The 27th International Conference on Artificial Intelligence and Statistics, AISTATS 2024,*** *Acceptance rate 27.6% over 1980 submissions*, May 2024.

2024 Huy Nguyen, Pedram Akbarian, **TrungTin Nguyen**, and Nhat Ho. A General Theory for Softmax Gating Multinomial Logistic Mixture of Experts. In ***Proceedings of the 41st International Conference on Machine Learning, ICML 2024***, *Acceptance rate 27.5% over 9,473 submissions*, July 2024.

2024 Mark Chiu Chong, Hien Duy Nguyen, and **TrungTin Nguyen**. Risk Bounds for Mixture Density Estimation on Compact Domains via the h-Lifted Kullback–Leibler Divergence. *arXiv preprint arXiv:2404.12586*, 2024.

2023 Huy Nguyen, **TrungTin Nguyen**, and Nhat Ho. Demystifying Softmax Gating Function in Gaussian Mixture of Experts. In ***Advances in Neural Information Processing Systems, NeurIPS 2023 Spotlight,*** *Acceptance rate 3.6% over 12343 submissions*, December 2023.

2022 **TrungTin Nguyen**, Faicel Chamroukhi, Hien D. Nguyen, and Geoffrey J. McLachlan. Approximation of probability density functions via location-scale finite mixtures in Lebesgue spaces. ***Communications in Statistics - Theory and Methods***, pages 1–12, May 2022.

2021 Hien Duy Nguyen, **TrungTin Nguyen**, Faicel Chamroukhi, and Geoffrey John McLachlan. Approximations of conditional probability density functions in Lebesgue spaces via mixture of experts models. ***Journal of Statistical Distributions and Applications***, volume 8, page 13, 2021.

2020 **TrungTin Nguyen**, Hien D Nguyen, Faicel Chamroukhi, and Geoffrey J McLachlan. Approximation by finite mixtures of continuous density functions that vanish at infinity. ***Cogent Mathematics & Statistics***, volume 7, page 1750861. Cogent OA, 2020.

Model selection

2023 **TrungTin Nguyen**, Dung Ngoc Nguyen, Hien Duy Nguyen, and Faicel Chamroukhi. A non-asymptotic risk bound for model selection in high-dimensional mixture of experts via joint rank and variable selection. In ***Australasian Joint Conference on Artificial Intelligence 2023, AJCAI 2023 Long Oral Presentation***, *Acceptance rate 11% over 213 submissions*, November 2023.

2022 **TrungTin Nguyen**, Hien Duy Nguyen, Faicel Chamroukhi, and Florence Forbes. A non-asymptotic approach for model selection via penalization in high-dimensional mixture of experts models. ***Electronic Journal of Statistics***, volume 16, pages 4742 – 4822, 2022.

Bayesian nonparametrics

2024 **TrungTin Nguyen**, Florence Forbes, Julyan Arbel, and Hien Duy Nguyen. Bayesian nonparametric mixture of experts for inverse problems. *Forthcoming in the* ***Journal of Nonparametric Statistics***, October 2024.

2022 **TrungTin Nguyen**, Florence Forbes, and Julyan Arbel. Bayesian nonparametric mixture of experts for high-dimensional inverse problems. In *BNP13 – 13th Conference on Bayesian Nonparametrics*, Puerto Varas, Chile, 2022.

Simulation-based inference

2024 Hien Duy Nguyen, **TrungTin Nguyen**, and Florence Forbes. Bayesian Likelihood Free Inference using Mixtures of Experts. In ***International Joint Conference on Neural Networks, IJCNN 2024***, *Acceptance rate 52% over 3272 submissions*, June 2024.

2023 Hien Duy Nguyen, **TrungTin Nguyen**, Julyan Arbel, and Florence Forbes. Concentration results for approximate Bayesian computation without identifiability. *Preprint. hal-03987197*, February 2023.

2022 Florence Forbes, Hien Duy Nguyen, **TrungTin Nguyen**, and Julyan Arbel. Summary statistics and discrepancy measures for approximate Bayesian computation via surrogate posteriors. ***Statistics and Computing***, volume 32, page 85, October 2022.

Professional Services

Journal Reviewing (See certificate)

IEEE Transactions on Information Theory (The Institute of Electrical and Electronics Engineers): 1 paper.

Electronic Journal of Statistics (Institute of Mathematical Statistics, Bernoulli Society for Mathematical Statistics and Probability): 2 papers.

Journal of the American Statistical Association (Taylor Francis): 2 papers.

Statistics and Computing (Springer): 2 papers.

Computational Statistics and Data Analysis (Elsevier): 4 papers.

Neurocomputing (Elsevier): 1 paper.

Biometrical Journal (Wiley): 2 papers.

Australian & New Zealand Journal of Statistics (Wiley): 2 paper.

Communications in Statistics - Theory and Methods (Taylor Francis): 2 papers.

Conference Reviewing

International Conference on Artificial Intelligence and Statistics (AISTATS): 4 papers.

International Conference on Learning Representations (ICLR): 3 papers.

Annual Conference on Neural Information Processing Systems (NeurIPS): 1 paper.

Annual Meeting of the Association for Computational Linguistics (ACL): 3 papers.

Proceedings of the Research School on Statistics and Data Science (RSSDS 2019) (Springer): 2 papers.

Editorial Board/Program Committee

Australian Statistical Conference 2025 (ASC2025): Scientific Program Committee.

The IEEE World Congress on Computational Intelligence – The International Joint Conference on Neural Networks (IJCNN 2024): Session Chair.

The Queensland Branch of the Statistical Society of Australia (SSA QLD 2024): General Councillor.

Research School on Statistics and Data Science (RSSDS 2019, Springer): Program Committee.

International Journal of Machine Intelligence and Sensory Signal Processing (Inderscience): Associate Editors.

Supervision and Teaching Experiences

07–11/2024: **Data Science Capstone Project 1 (DATA7901) (Supervision: 4 Students). Responsible professor: Slava Vaisman**, *Postgraduate Coursework, The University of Queensland*, Australia.

02–11/2024: **Introduction to Data Science (DATA7001) (Guest Lecturer, Tutorial Content and Practical Session, 30h). Responsible professor: Xin Guo**, *Postgraduate Coursework, The University of Queensland*, Australia.

01–04/2023: **Statistical analysis and document mining (Lecturer for Complementary Course, 17h). Responsible professor: Pedro Rodrigues**, *Master 1 of Applied Mathematics, Université Grenoble Alpes*, France.

09–12/2022: **Méthodes statistiques pour la biologie - STA301 (Lecturer and Tutorial Content, 23h). Responsible professor: Julien Chevallier**, *Licence Sciences et Technologies - BIO, Université Grenoble Alpes*, France.

Fall 2018: **Mathematical and numerical foundations of modeling and simulation using partial differential equations (Lecturer for Preparatory Course, 24h). Responsible professor: Jing-Rebecca Li (IDEFIX team, Inria)**, *French-Vietnam Master 2 in Applied Mathematics, VNU-HCM*, Vietnam.

Fall 2017: **Principles of Mathematical Analysis (Teaching Assistant, 30h). Responsible professor: Duong Minh Duc**, *Bachelor in Mathematics and Computer Science, VNU-HCM*, Vietnam.