Son Van Nguyen

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CONTACT INFORMATION

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EDUCATION

University of Texas at Austin, Austin, USA
Ph.D Student in Computer Sciences Aug 2022-Present

- Advisor: Professor Qiang Liu, Professor Nhat Ho
- GPA: 4.00/4.00

Ha Noi University of Science and Technology (HUST) Ha Noi, Vietnam
Bachelor of Information Technology, Program of Talented Engineers Aug 2014 - Jun 2019

- Supervisor: Professor Khoat Than
- Thesis title: "An effective Bayesian approach for discovering hidden semantics from data streams"
- GPA: 3.50/4.00 (rank 2/21 honored class), Thesis: 4.00/4.00 (Best Thesis Award)

EXPERIENCE

VinAI Research, Ha Noi, Vietnam
AI Research Resident Jul 2020-Jul 2022

- Main research topics: Bayesian Deep Learning, Deep Generative Models, Optimal Transport.
- Advisor: Dr. Nhat Ho (Assistant Professor at UT, Austin)

Data Science Laboratory, Ha Noi, Vietnam
Research Assistant Aug 2018 - Jul 2020

- Main research topics: Probabilistic Graphical Model, Bayesian inference, Online Learning.
- Advisor: Dr. Khoat Than (Associate Professor at HUST)

Viettel Network Technology R&D Center Ha Noi, Vietnam
Internship, Department of Data Science Jun 2018 - Jun 2019

- Projects: Data Analysis in Telecommunication, Recommendation Systems for Promotions

RESEARCH INTERESTS

My research intersects probabilistic modeling, deep learning, and optimization, aiming to integrate the complementary advantages of these areas into foundation problems of modeling, inference, and learning. Currently, my work focuses on developing efficient and theoretically sound optimization algorithms for large-scale deep learning with non-conventional constraints. I am also particularly excited about scalable and robust probabilistic methods applied to complex settings across diverse domains, including Bayesian deep learning, deep generative models, hierarchical Bayesian models, and online/continual learning.

PUBLICATIONS

- **Son Nguyen**, Bo Liu, Lizhang Chen, Qiang Liu, "Improving Adaptive Moment Optimization via Preconditioner Diagonalization", `https://arxiv.org/abs/2502.07488`
- **Son Nguyen**, Lizhang Chen, Bo Liu, Qiang Liu, "Memory-Efficient Optimization with Factorized Hamiltonian Descent", *International Conference on Artificial Intelligence and Statistics (AISTATS), 2025*
- **Son Nguyen***, Ha Nguyen*, Hoang Pham*, Linh Ngo, Khoat Than, "Adaptive Infinite Dropout for Noisy and Sparse Data Streams", *Machine Learning Journal, 2022*
- **Son Nguyen***, Hoang Phan*, Anh Phan Tuan*, Ngo Van Linh, Khoat Than, "Reducing catastrophic forgetting in neural networks via gaussian mixture approximation", *Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD), 2022*
- **Son Nguyen**, Duong Nguyen, Khai Nguyen, Khoat Than, Hung Bui*, Nhat Ho*, "Structured Dropout Variational Inference for Bayesian Neural Networks", *Advances in Neural Information Processing Systems (NeurIPS), 2021*

- Khai Nguyen, **Son Nguyen**, Nhat Ho, Tung Pham, Hung Bui, "Improving Relational Regularized Autoencoders with Spherical Sliced Fused Gromov Wasserstein", *International Conference on Learning Representations (ICLR), 2021*
- **Son Nguyen**, Tung Nguyen, Linh Ngo, Khoat Than, "Infinite Dropout for training Bayesian models from data streams", *IEEE International Conference on Big Data (Big Data), 2019*

Technical talks

- Recent Advances in Deep Learning Uncertainty *Data Science Lab - HUST* Nov, 2021
- Structured Dropout Variational Inference for Bayesian Neural Networks *VinAI NeurIPS Workshop* Nov, 2021
- Uncertainty in Deep Learning and the case for Bayesian Deep Learning *VinAI Research*, slide here Jun, 2021
- Optimal Transport for Generative Modelling, *VinAI Research*, slide here Oct, 2020

Professional Services

Conference Reviewer

- International Conference on Artificial Intelligence and Statistics (AISTATS): 2022, 2023, 2024
- The International Conference on Learning Representations (ICLR): 2024
- Symposium on Advances in Approximate Bayesian Inference (AABI): 2023

Teaching Assistant

- Principles of Machine Learning (CS363M), *UT Austin* Spring 2024
- Algorithms and Complexity (CS331), *UT Austin* Fall 2023

Thesis mentor for undergraduate students

- Ha Nguyen, Hoang Pham: Project "Online Bayesian Inference Methods for Noisy and Sparse Data Streams"
- Hoang Phan, Anh Phan: Project "Reducing Catastrophic Forgetting in Neural Networks via Gaussian Mixture Approximation"

Honors and Awards

- James C. Browne Graduate Fellowship, UT Computer Science 2025
- Vingroup Innovation Foundation (VINIF) Research Scholarship 2019, 2020
- Best Thesis Award, Best Presentation Award for Undergraduate Student 2019
- Third Prize in the Scientific Research Student Conference, *HUST* 2019
- Scholarship for Students with Excellent Academic Records, *HUST* 2015, 2017
- Vietnam Mathematical Olympiad for University Students (VMS) 2015, 2016 *(First Prize in Calculus, Second Prize in Algebra)*
- Scholarship of the National Program for the Development of Mathematics, *Vietnam Institute for Advanced Study in Mathematics (VIASM)* 2014, 2015
- Second Prize in Vietnam Mathematical Olympiad (VMO) for High School Students 2014

Education Contributions

- **Book:** "Olympic Mathematical Topics", 2 volumes, *Vietnam National University Press, Ha Noi.* Authors: Nguyen Dinh Thanh Cong, Nguyen Van Huong, Nguyen Duy Hung, Tran Tri Kien, **Nguyen Van Son**, Le Nhat, Tran Bao Trung Jul 2017
- **Book:** "Topics on Combinatorics and Complex Numbers", *Vietnam National University Press, Ha Noi.* Authors: Tran Tri Kien, **Nguyen Van Son**, Le Nhat Jul 2016
- Member of GSTT Group (a non-profit educational organization), lead refresher courses and consolidate the knowledge for high school students Oct 2014 - Oct 2015

Technical Skills

Programming skills:

- Proficient: Python
- Familiar: C, Java, MATLAB, LaTeX, SQL

Languages

- Vietnamese: Native.
- English: Proficient.