SON VAN NGUYEN

VinAI Research, Ha Noi, Viet Nam.
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RESEARCH INTEREST

My central research has been motivated by developing impactful, interpretable, and reliable algorithms for machine learning models. Currently, my research focuses on methods at the intersection of probabilistic modeling and deep learning, from which I aim to combine the complementary advantages of these two fields into modeling, inference, and learning. I am particularly excited about efficient and scalable probabilistic inference methods applied in complex settings of several domains such as Bayesian deep learning, deep generative models, hierarchical Bayesian models, and large-scale online/continual learning.

EDUCATION

Ha Noi University of Science and Technology (HUST) — Ha Noi, Viet Nam

- Master of Data Science, *Master of Research degree* — Oct 2019 - Apr 2021
  Thesis title: "Improving Bayesian inference in deep neural networks with Variational Structured Dropout"
  CPA: 3.84/4.00, Thesis: 4.00/4.00
- Bachelor of Information Technology, *Program of Talented Engineers* — Aug 2014 - Jun 2019
  Thesis title: "An effective Bayesian approach for discovering hidden semantics from data streams"
  CPA: 3.50/4.00 (rank 2/21 in the talented class), Thesis: 4.00/4.00

Phan Boi Chau High School for the Gifted Students, *Specialized Math Class* — Nghe An, Viet Nam
Aug 2011 - Jun 2014

EXPERIENCES

VinAI Research (www.vinai.io) — Ha Noi, Viet Nam
AI Research Resident — Jul 2020-present

- Main research topics: Bayesian Deep Learning, Deep Generative Models
- Advisor: Dr. Nhat Ho (Assistant Professor at UT, Austin)
- Knowledge gained: Advances in Bayesian Deep Learning (gradient-based MCMC, Variational Inference with dependence structure, principles of uncertainty estimation, applications in continual/active learning); Deep Generative Models (VAEs, GANs, Normalizing Flows, applications of Optimal Transport)

Data Science Laboratory (ds.soict.hust.edu.vn) — Ha Noi, Viet Nam
Research Assistant — Aug 2018 - Jul 2020

- Main research topics: Probabilistic Graphical Model, Bayesian inference
- Advisor: Dr. Khoat Than (Associate Professor at HUST)
- Knowledge gained: Foundations of Machine Learning, Deep Learning and Optimization; Bayesian inference (MCMC, scalable variational approximation, applications in hierarchical Bayesian models and online learning)

Teaching Assistant — Jan 2020 - Jun 2020

- Machine Learning and Data Mining course

Viettel Network Technology R&D Center, *Department of Data Science* — Ha Noi, Viet Nam
Internship — Jun 2018 - Jun 2019

- Projects: analyze the consumer behavior in telecommunication of millions of users, develop recommendation algorithms for promotions

SUBMISSIONS

1. **Son Nguyen**, Khai Nguyen, Nhat Ho, "Amortized Bayesian Continual Learning", *To be submitted 2022*

2. Ha Nguyen*, Hoang Pham*, **Son Nguyen**, Linh Ngo, Khoat Than, "Adaptive Infinite Dropout for Noisy and Sparse Data Streams", *Under minor revision at Machine Learning journal, 2021*

PUBLICATIONS

1. **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*

2. Khai Nguyen, **Son Nguyen**, Nhat Ho, Tung Pham, Hung Bui, "Distributional Sliced-Wasserstein and Applications to Generative Modeling", *International Conference on Learning Representations (ICLR) 2021*

3. **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

1. Uncertainty in Deep Learning and the case for Bayesian Deep Learning, *VinAI Research*, slide here — Jun, 2021

2. Optimal Transport for Generative Modelling, *VinAI Research*, slide here — Oct, 2020

AWARDS AND RECOGNITIONS

1. Scholarship of the Domestic Master Program of Vingroup Innovation Foundation (VINIF, $5,000) — 2019

2. Best Thesis Award, Best Presentation Award for undergraduate student — 2019

3. Third Prize in the Scientific Research Student Conference, HUST — 2019

4. Scholarship for students with excellent academic records, HUST — 2015, 2017

5. Vietnam Mathematical Olympiad for university students (VMS) — 2015, 2016
(First Prize in Calculus, Second Prize in Algebra)

6. Scholarship of the National Program for the Development of Mathematics, Vietnam Institute for Advanced Study in Mathematics (VIASM) — 2014, 2015

7. Second prize in Vietnam Mathematical Olympiad (VMO) for high school students — 2014

EDUCATIONAL ACTIVITIES

1. **Book:** Olympic mathematical topics for gifted students, 2 volumes, *Vietnam National University Press, Ha Noi.* Nguyen Dinh Thanh Cong, Nguyen Van Huong, Nguyen Duy Hung, Tran Tri Kien, **Nguyen Van Son**, Le Nhat, Tran Bao Trung — Jul 2017

2. **Book:** Topics on combinatorics and complex numbers, *Vietnam National University Press, Ha Noi.* Tran Tri Kien, **Nguyen Van Son**, Le Nhat — Jul 2016

3. Member of GSTT Group (a non-profit educational organization), lead refresher courses and consolidate the knowledge for high school students — Oct 2014 - Oct 2015

SPECIALIZED AND LANGUAGE SKILLS

Programming skills:

- Proficient: Python (PyTorch, numpy, pandas, scikit-learn)
- Familiar: C, JAVA, LATEX

Languages:

- Vietnamese: Native
- English: IELTS 6.5 overall