SON VAN NGUYEN

VinAI Research, Ha Noi, Viet Nam.
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RESEARCH INTEREST

My core research focuses on developing interpretable and scalable algorithms for machine learning models. I am particularly excited about practical and flexible approximate inference methods applied in complex settings such as probabilistic deep learning, hierarchical latent models, large-scale online 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: 3.84/4.0
- 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: 3.50/4.0 (rank 2/21 in the talented class)

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 — Aug 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), Deep Generative Models (VAEs, GANs, Normalizing Flows, applications of Optimal Transport)

Data Science Laboratory (HUST) — Ha Noi, Viet Nam
Research Assistant — Aug 2018 - Aug 2020

- Main research topics: Probabilistic Graphical Model, Bayesian inference
- Advisor: Dr Khoat Than (Associate Professor at HUST)
- Knowledge gained: Foundations of Machine Learning, Topic models, Bayesian inference, Variational Approximation, and applications in online/continual learning

Teaching Assistant — Feb 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

PUBLICATIONS

1. **Son Nguyen**, Duong Nguyen, Khai Nguyen, Nhat Ho, Khoat Than, Hung Bui, "Structured Dropout Variational Inference for Bayesian Neural Networks," *Under review*

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

4. **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*

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 good academic records, HUST 2015, 2017

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

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

7. Scholarship (for high school students) of the National Program for the Development of Mathematics of Vietnam Institute for Advanced Study in Mathematics, VIASM 2013, 2014

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

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 SKILLS

Programming skills:

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