

RESEARCH INTEREST

My research focus has been improving the optimization techniques for Multi-Task deep neural networks, profiling the trade-off between the conflicting tasks, and investigating their effectiveness in large-scale problems such as Recommender Systems, Large Language Models.

EDUCATION

Bachelor **Hanoi University of Science and Technology (HUST)** **08/2018 – 09/2022**

- Academic advisor: [Dr. Thang N. Tran](#)
- Major: Mathematics and Informatics. CPA: 3.11/4.00 (Rank 18 out of 94 in my department)

PUBLICATIONS

- [1] Quang-Huy Nguyen[†], **Long P. Hoang**[†], Vu V. Hoang, Dung D. Le, [Controllable Expensive Multi-objective Optimization with Warm-starting Gaussian Process](#), *under review at AAAI-24*, 2023
- [2] **Long P. Hoang**, Dung D. Le, Tuan A. Tran, Thang N. Tran, [Improving Pareto Front Learning via Multi-Sample Hypernetworks](#), *In Proceedings of the AAAI Conference on Artificial Intelligence*, 2023
- [3] Tuan A. Tran[†], **Long P. Hoang**[†], Dung D. Le, Thang N. Tran, [A Framework for Controllable Pareto Front Learning with Completed Scalarization Functions and its Applications](#), *Neural Networks*, 2023
- [4] Anh T. Ho, Tuan A. Tran, **Long P. Hoang**, Ha H. Le, Thang N. Tran, [Multi Deep Learning Model for Building Footprint Extraction from High-Resolution Remote Sensing Image](#), *In Intelligent Systems and Networks*, 2022

EXPERIENCE

Research Assistant **College of Engineering and Computer Science, VinUniversity**

Advisor: [Assist. Prof. Dung D. Le](#)

Parameter-Efficient Multi-Task Adaptation for Large Language Models 07/2023 – 10/2023

- Propose a novel method for efficiently fine-tuning large language models at a low cost to perform several downstream tasks while incorporating a unique mechanism that inhibits negative transfer and encourages positive transfer between tasks

Controllable Multi-Objective Recommender System 10/2022 – 10/2023

- Develop a new framework for Multi-Objective Recommendation which considers a variety of criteria, including fairness, robustness, novelty in special scenarios such as cold start, adversarial attack,...

Expensive Multi-Objective Optimization 03/2023 – 10/2023

- Build high-dimensional Bayesian Optimization methods by estimating the gradient of Black-Box functions (under review at AAAI-24)

[†]Co-First Author

Human Pose Scoring and Correction

04/2023 – 10/2023

- Construct a novel three-stage framework, inspired by Counterfactual Inference and Diffusion Models, which effectively scores and corrects human poses with datasets including only classification labels
- Indirectly solve the human problem reconstruction problem by the superior of the new framework

Profiling the Pareto Front in Multi-Task Learning

02/2022 – 10/2022

- Proposed a novel method named Multi-Sample Hypernetwork to approximate the entire trade-off curve of conflicting objectives (accepted to AAAI 2023)

Lab Assistant

12/2022 – 10/2023

- Set up server from scratch using Docker for College of Engineering and Computer Science, VinUniversity
- Managed resources and supervised server activities

Teaching Assistant

02/2022 – 07/2022

- Supported Assist. Prof. Dung D. Le during the lecture class and held office hours in class "Database Concepts and Skills for Big Data", AY 2021-2022

Undergraduate Research Assistant

School of Applied Mathematics and Informatics, HUST

Advisor: [Dr. Thang N. Tran](#)

Multi-Objective Optimization with Completed Scalarizations

02/2022 – 02/2023

- Proposed and proved the convergence of a new framework for Pareto Multi-Task Learning with Scalarization Functions in the pseudo-convex and quasiconvex assumptions (accepted to the journal Neural Networks)

Building Footprint Extraction from Remote Sensing Images

07/2022 – 10/2022

- Developed a two-stage framework, which combines U2-Net and Mask-CNN, to increase 1.8-2.5% mAP, mAR for Building Footprint Extraction, especially effective in populated areas (accepted to ICISN 2022)

PERSONAL SKILLS

Languages

IELTS 6.0 (L 5.5, R 6.5, W 6.0, S 6.5), GRE (V 139, Q 161, A 3.0)

Programming Languages

Python, C

Frameworks

Latex, Pytorch, Scikit-Learn, Numpy, Pandas, Matplotlib, Docker

ADWARDS & CERTIFICATES

- 3rd Prize (Grooo International company's sponsorship) in Scientific Research Student Conference at School of Mathematics and Informatics, Hanoi University of Science and Technology, Hanoi University of Science and Technology, Jul 2022
- Certificate of Completion of Developer Circles Vietnam Innovation Challenge in Data Science, sponsored by Facebook

REFERENCES

1. [Assist. Prof. Dung D. Le](#) (Ph.D), College of Engineering and Computer Science, VinUniversity
dung.ld@vinuni.edu.vn
2. [Dr. Thang N. Tran](#) (Ph.D), School of Applied Mathematics and Informatics, Hanoi University of Science and Technology
thang.tranngoc@hust.edu.vn