

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

- PhD** Singapore University of Technology and Design (SUTD) 09/2024 – Present
- Academic advisor: [Assoc. Prof. Lu Wei](#)
 - Major: Computer Science
- 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] Minh-Duc Nguyen, Phuong Mai Dinh, Quang-Huy Nguyen, **Long P. Hoang**, Dung D. Le, [Improving Pareto Set Learning for Expensive Multi-objective Optimization via Stein Variational Hypernetworks](#), *In Proceedings of the AAAI Conference on Artificial Intelligence*, 2025
- [2] 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*, 2024
- [3] **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
- [4a] 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

- NLP Engineer** FTech Co., Ltd 12/2023 – 06/2024
- Developing a General Natural Language Understanding tool for Vietnamese*
- Developed a NER model recognizing 9 popular entities for Vietnamese with 0.91 f1-score using Transfer Learning and Adversarial Training
 - Constructed an Entity Linking model that obtained a 0.85 accuracy without a degradation in the performance of the NER model
 - Reduced half of the VRAM of the LLM Mistral-7b using SmoothQuant
- Research Assistant** College of Engineering and Computer Science, VinUniversity
- Advisor: [Assist. Prof. Dung D. Le](#)
- Controllable Multi-Objective Recommender System* 10/2022 – 10/2023

[†]Co-First Author

- Developed 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

- Built high-dimensional Bayesian Optimization methods by estimating the gradient of Black-Box functions
- Approximated the entire trade-off curve of black-box objects using Pareto Front Learning with Hypernetworks computed by Gaussian Processes

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)

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

07/2021 – 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)

ADWARDS & CERTIFICATES

- AISG PhD Fellowship, granted by AI Singapore, Sep 2024
- 3rd Prize (Grooo International company's sponsorship) in Scientific Research Student Conference at School of Mathematics and Informatics, Hanoi University of Science and Technology, Jul 2022
- Certificate of Completion of Developer Circles Vietnam Innovation Challenge in Data Science, sponsored by Facebook, Nov 2020

REFERENCES

1. [Assoc. Prof. Lu Wei](#) (Ph.D), Information Systems Technology and Design
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2. [Assist. Prof. Dung D. Le](#) (Ph.D), College of Engineering and Computer Science, VinUniversity
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3. [Dr. Thang N. Tran](#) (Ph.D), School of Applied Mathematics and Informatics, Hanoi University of Science and Technology
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