

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
<ul style="list-style-type: none">Academic advisor: Assoc. Prof. Lu WeiMajor: Computer Science		
Bachelor	Hanoi University of Science and Technology (HUST)	08/2018 – 09/2022
<ul style="list-style-type: none">Academic advisor: Dr. Thang N. TranMajor: 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](#), *arXiv preprint arXiv:2311.15297*, 2024
- [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
- [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

NLP Engineer	FTech Co., Ltd
<i>Developing a General Natural Language Understanding tool for Vietnamese</i>	
<i>12/2023 – 06/2024</i>	
<ul style="list-style-type: none">Developed a NER model recognizing 9 popular entities for Vietnamese with 0.91 f1-score using Transfer Learning and Adversarial TrainingConstructed an Entity Linking model that obtained a 0.85 accuracy without a degradation in the performance of the NER modelReduced 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	
<i>Controllable Multi-Objective Recommender System</i>	
<i>10/2022 – 10/2023</i>	

[†]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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