

## 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

<b>PhD</b>	<b>Singapore University of Technology and Design (SUTD)</b>	<b>09/2024 – Present</b>
<ul style="list-style-type: none"><li>• Academic advisor: <a href="#">Assoc. Prof. Lu Wei</a></li><li>• Major: Computer Science</li></ul>		
<b>Bachelor</b>	<b>Hanoi University of Science and Technology (HUST)</b>	<b>08/2018 – 09/2022</b>
<ul style="list-style-type: none"><li>• Academic advisor: <a href="#">Dr. Thang N. Tran</a></li><li>• Major: Mathematics and Informatics. CPA: 3.11/4.00 (Rank 18 out of 94 in my department)</li></ul>		

## PUBLICATIONS

- [1] Quang-Huy Nguyen<sup>†</sup>, **Long P. Hoang**<sup>†</sup>, 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<sup>†</sup>, **Long P. Hoang**<sup>†</sup>, 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

<b>NLP Engineer</b>	<b>FTech Co., Ltd</b>
<i>Developing a General Natural Language Understanding tool for Vietnamese</i>	
<i>12/2023 – 06/2024</i>	
<ul style="list-style-type: none"><li>• Developed a NER model recognizing 9 popular entities for Vietnamese with 0.91 f1-score using Transfer Learning and Adversarial Training</li><li>• Constructed an Entity Linking model that obtained a 0.85 accuracy without a degradation in the performance of the NER model</li><li>• Reduced half of the VRAM of the LLM Mistral-7b using SmoothQuant</li></ul>	
<b>Research Assistant</b>	<b>College of Engineering and Computer Science, VinUniversity</b>
Advisor: <a href="#">Assist. Prof. Dung D. Le</a>	
<i>Controllable Multi-Objective Recommender System</i>	
<i>10/2022 – 10/2023</i>	

<sup>†</sup>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)

## **PERSONAL SKILLS**

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<b>Languages</b>	IELTS 6.0 (L 5.5, R 6.5, W 6.0, S 6.5), GRE (V 139, Q 161, A 3.0)
<b>Programming Languages</b>	Python, C
<b>Frameworks</b>	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, Jul 2022
- Certificate of Completion of Developer Circles Vietnam Innovation Challenge in Data Science, sponsored by Facebook, Nov 2020

## **REFERENCES**

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1. [Assoc. Prof. Lu Wei](#) (Ph.D), Information Systems Technology and Design  
*luwei@sutd.edu.sg*
  2. [Assist. Prof. Dung D. Le](#) (Ph.D), College of Engineering and Computer Science, VinUniversity  
*dung.ld@vinuni.edu.vn*
  3. [Dr. Thang N. Tran](#) (Ph.D), School of Applied Mathematics and Informatics, Hanoi University of Science and Technology  
*thang.tranngoc@hust.edu.vn*