Long P. Hoang

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RESEARCH INTEREST

My research focus has been on 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.

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

PUBLICATIONS

[1] **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

[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, *arXiv preprint arXiv:2302.12487*, 2023 (under review by Neural Network Journal)

[3] 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

Controllable Multi-Objective Recommender System *10/2022 – Present*
- Develop a new framework for Multi-Objective Recommendation which consider a variety of criteria, including fairness, robustness, novelty in special scenarios such as cold start, adversarial attack,...

Expensive Multi-Objective Optimization *03/2023 – Present*
- Build high-dimensional Bayesian Optimization methods by estimating the gradient of Black-Box functions

Human pose scoring and correction *04/2023 – Present*
- 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 – 05/2023*
- Set up server from scratch 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 (under review by Neural Networks journal)

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)

Named Entity Recognition for Vietnamese Customs Declaration   *03/2021 – 07/2021*
- Developed a nearly 100% accurate Named-Entity Recognition model for Vietnamese customs declaration by using BERT, PhoBERT with transfer learning

ADWARDS & CERTIFICATES

- 3rd Prize (Grooo International company's sponsorship) in Scientific Research Student Conference at Institute level, 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
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