

Ngoc-Hieu Nguyen

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Hanoi, Vietnam

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RESEARCH INTERESTS

I am focused on understanding how intelligence emerges and leveraging this understanding to develop learning algorithms that are more efficient, explainable, and robust.

EDUCATION

VNU - University of Engineering and Technology

Hanoi, Vietnam

Bachelor in Computer Science (Hons.) - GPA: 3.67/4.0

Aug 2018 - Aug 2022

- Thesis: An application of Neural Tangent Kernel on DEQ Models - Advisors: Dr. Hoang Thanh-Tung and Dr. Ta Viet Cuong.
- Relevant Coursework: Machine learning, NLP, Computer Vision, Multivariate Calculus, Linear Algebra, Probability and Statistics.

RESEARCH EXPERIENCE

VinUniversity - College of Engineering & Computer Science

Hanoi, Vietnam

Research Assistant

June 2023 - Current

- Large Language Models Alignment, Large Language Models Reasoning - Supervisor: Prof. Khoa Doan
- Building Efficient Communication Federated Recommendation Systems - Supervisor: Prof. Kok-Seng Wong and Prof. Andrew Le

FPT Software - AI Center

Hanoi, Vietnam

AI Resident - Mentor: Dr. Hoang Thanh-Tung

May 2021 - June 2023

- FPT Software, a subsidiary of FPT Corporation, is the largest information technology service company in Vietnam, with over 20000 employees and an annual revenue exceeding \$1 billion.
- Main research interest: Theoretical foundations for machine learning. Topics: Training Dynamics of Neural networks, Implicit Models (Neural ODEs, Deep Equilibrium Models,...), and Influence functions.
- Research Project 1: Analyzing the gradient flow dynamic of training DEQ models.
- Research Project 2: Improving Influence Function for Error Detection on NLP tasks.
- Research Project 3: Developing Out-of-Distribution Detection methods.

PUBLICATIONS

Under Review

Wicked Oddities: Selectively Poisoning for Effective Clean-Label Backdoor Attacks

Anonymous

Submitted to *The Thirteenth International Conference on Learning Representations*, 2024, URL: <https://openreview.net/forum?id=1Z3C49JQVf>

Mitigating Reward Over-optimization in Direct Alignment Algorithms with Adaptive Importance Sampling

Anonymous*

Submitted to *The Thirteenth International Conference on Learning Representations*, 2024, URL: <https://openreview.net/forum?id=H9dNX6TaRE>

Conference Proceedings

Towards Efficient Communication and Secure Federated Recommendation System via Low-rank Training

Nguyen Ngoc-Hieu, Tuan-Anh Nguyen, Tuan Minh Nguyen, Vu Tien Hoang, Dung D. Le, Kok-Seng Wong

The Web Conference 2024 (Oral), 2024, URL: <https://arxiv.org/pdf/2401.03748>

Class-based Influence Functions for Error Detection

Thang Nguyen-Duc, Hoang Thanh-Tung, Quan Hung Tran, Dang Huu-Tien, **Nguyen Ngoc-Hieu**, Anh T. V. Dau, Nghi D. Q. Bui

Association for Computational Linguistics (ACL), 2023, URL: <https://aclanthology.org/2023.acl-short.104/>

Workshops

Clean-label Backdoor Attacks by Selectively Poisoning with Limited Information from Target Class

Nguyen Hung-Quang, **Nguyen Ngoc-Hieu**, The-Anh Ta, Thanh Nguyen-Tang, Khoa D Doan, Hoang Thanh-Tung

NeurIPS 2023 Workshop on Backdoors in Deep Learning - The Good, the Bad, and the Ugly, 2023, URL: <https://openreview.net/pdf?id=JvUuutHa2s>

A Cosine Similarity-based Method for Out-of-Distribution Detection

Nguyen Ngoc-Hieu, Nguyen Hung-Quang, The-Anh Ta, Thanh Nguyen-Tang, Khoa D Doan, Hoang Thanh-Tung

ICML Workshop on Spurious Correlations, Invariance, and Stability, 2023, URL: <https://arxiv.org/pdf/2306.14920>

TEACHING & MENTORING EXPERIENCE

VinUniversity - College of Engineering & Computer Science

Hanoi, Vietnam

Teaching Assistant - Data Mining Course

Spring 2024, Fall 2024

- Delivered recitations on data mining, covering topics such as pattern mining, classification & regression, cluster analysis, deep learning, self-supervised learning, and outlier detection.
- Developed and graded quizzes, homework, project reports, and project presentations.

ACHIEVEMENTS

2019	Dean's List , VNU-UET	Hanoi, Vietnam
2021	Top 8 , Kaggle Competition - Plant Pathology 2021	Hanoi, Vietnam
2023	Top 1 , AIC Hackathon, FPT AI Center. Project: StickerAI - Generating mascot sticker using Stable Diffusion.	Hanoi, Vietnam
2024	Silver medal , Kaggle Competition - AI Mathematical Olympiad - Progress Prize 1	Hanoi, Vietnam

SKILLS

Programming	Python (NumPy, Pandas, Scikit-learn. etc.), C/C++, CUDA.
ML frameworks	PyTorch, Jax, Transformers.
DevOps	Linux, Shell (Bash/Zsh), Git, Docker.

LANGUAGES

English	Proficient (IELTS – Overall score of 7.5)
Vietnamese	Native

REFERENCES

Prof. Khoa Doan

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College of Engineering & Computer Science
VinUniversity
Gia Lam District, HN, Vietnam
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Prof. Kok-Seng Wong

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Prof. Le Duy Dung (Andrew)

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Dr. Hoang Thanh-Tung

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