Duy A. Nguyen

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Research Statement

My research focuses on **multimodal learning**, exploring techniques to enhance model **robustness, reliability, and interpretability**, especially in the presence of incomplete or inconsistent data. I leverage self-supervised, semi-supervised learning, and uncertainty estimation to improve performance. Currently, I am interested in **optimizing Large Multimodal Models (LMMs)** through efficient, modular plug-in methods that enhance existing models without compromising accuracy.
I also have experienced with LLMs and Generative AI (both Diffusion-based and GAN-based techniques).

Education

- **University of Illinois Urbana-Champaign** — Champaign, Illinois
  PhD Student - Computer Science — *Aug 2023 - Present*
  GPA: **3.98**/4.00
  Expected Graduation Date: 15th May, 2028

- **Hanoi University of Science and Technology** — Hanoi, Vietnam
  Engineer - Information and Communication Technology (ICT) — *Sep 2018 - Sep 2022*
  GPA: **3.77**/4.00
  School of Information and Communication Technology's top **3.3**% *students*

Publications

- **IJCAI 2025**: **Duy A. Nguyen**, Abhi Kamboj, Minh N. Do, "Robult: Leveraging Redundancy and Modality-Specific Features for Robust Multimodal Learning", International Joint Conferences on Artificial Intelligence (IJCAI), 2025.
- **ACL Findings 2025**: **Duy A. Nguyen**, Rishi Kesav Mohan, Shimeng Yang, Pritom Saha Akash, Kevin Chen-Chuan Chang, "MiniELM: A Lightweight and Adaptive Query Rewriting Framework for E-Commerce Search Optimization", Association for Computational Linguistics (ACL), 2025.
- **ICDM 2024**: **Duy A. Nguyen**, Trang H. Tran, Huy Hieu Pham, Phi Le Nguyen, Lam M. Nguyen, "Improving Time Series Encoding with Noise-Aware Self-Supervised Learning and an Efficient Encoder", International Conference on Data Mining (ICDM), 2024.
- **EAAI 2024**: **Duy A. Nguyen**, Thu Hang Phung, Thuy Dung Nguyen, Huy Hieu Pham, Kien Nguyen, Phi Le Nguyen, "GAMMA: A universal model for calibrating sensory data of multiple low-cost air monitoring devices", EAAI 2024.
- **PLOS ONE 2023**: **Duy A. Nguyen**, Huy Hieu Pham, Huynh Thanh Trung, Quoc Viet Hung Nguyen, Thao Nguyen Truong, Phi Le Nguyen, "High accurate and explainable multi-pill detection framework with graph neural network-assisted multimodal data fusion", PLOS ONE 2023.
- **EAAI 2023**: **Duy A. Nguyen**, Duc Viet Hoang, Thuy Dung Nguyen, Viet Hung Vu, Kien Nguyen, Phi Le Nguyen, Yusheng Ji, "Attentional Ensemble Model for Accurate Discharge and Water Level Prediction with Training Data Enhancement", EAAI 2023.
- **Scientific Reports 2022**: **Duy A. Nguyen**, Phi Le Nguyen, Viet Hung Vu, Quoc Viet Pham, Viet Huy Nguyen, Minh Hieu Nguyen, Thanh Hung Nguyen, Kien Nguyen, "Accurate Discharge and Water Level Forecasting Using Ensemble Learning with Genetic Algorithm and Singular Spectrum Analysis-based Denoising", Nature Scientific Reports Journal 2022.

Academic Services

- **Program Committee**: Conference Reviewer
  - International Conference on Learning Representations (**ICLR**): 2023-2025
  - Conference on Neural Information Processing Systems (**NeurIPS**): 2023-2025
  - International Conference on Machine Learning (**ICML**): 2023-2025
  - Conference on Computer Vision and Pattern Recognition (**CVPR**): 2024
  - AAAI Conference on Artificial Intelligence (**AAAI**): 2023
  - ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**): 2024

Working Experience and Projects

- **Cantina Inc.** Remote (US)
  Research Scientist Intern *May 2025 - August 2025*
  - **Improving in-house Video Diffusion model**:
    Tasks: Improving inference speed of in-house Diffusion model, preserving performance
    Technical skills: Model Distillation, Video diffusion
  - **Developing Generative AI research ideas**:
    Task: Developing, implementing ideas solving problem of audio-based lip-sync video generation for both human and non-human characters. Technical skills: Video diffusion, model training, literature review
- **National Institute of Advanced Industrial Science and Technology (AIST), Japan** On-site
  Internship (Full-time) - Mentor: Researcher Truong Thao Nguyen *Oct 2022 - Dec 2022*
  - **Multimodal Learning, Missing in Healthcare Application**:
    Tasks: Survey about Multimodal learning, missing in Healthcare applications.
    Technical skills: python, pytorch, R
- **Vinuni-Illinois Smart Health Center** On-site
  Research Assistant - VAIPE project (Full-time) - PI: Prof. Huy Hieu Pham *January 2021 - August 2023*
  - **Knowledge Graph-assisted Pill Detection**:
    Tasks: Doing research for incorporating external knowledge into Pill Detection problem.
    Technical skills: Graph neural networks (Deep walk, GCN, GAT, GIN, etc), Object detection models (Yolo, Faster RCNN, ViT), Attention mechanism, Transformer architecture, multimodal data fusion.
  - **AI4VN VAIPE Challenge 2023 - Organizer Team**:
    Task: Prepare dataset, metrics, automated scorer for VAIPE challenge.
    Technical skills: Python, Data preprocessing
- **BKAI Research Center** On-site
  Research Assistant (Part-time) - PI: Prof. Phi Le Nguyen *Sep 2019 - Sep 2022*
  - **Discharge, Water Level prediction**:
    Task: Doing research on time series predictions for hydrological factors (Discharge and Water Level).
    Technical skills: Data analysis, Recurrent neural networks, ensemble learning, Singular Spectrum Analysis
  - **Fi-Mi Project: AI-based Mobile Air Quality Monitoring and Forecasting System**:
    Tasks: Team leader of the back-end and mobile development teams
    Technical skills: FastAPI, MongoDB, Flutter

Honors and Awards

- **The second prize in the National Science and Technology Awards for Students in Higher Education Institutions 2022**: The second prize with work entitled "Joint Optimization of Charging Location and Time for Network Lifetime Extension in WRSNs."
- **Best Presentation Award - 2022 Thesis Defense (Undergrad)**: Graduation thesis: KGPNet - A Knowledge Graph-assisted Framework for Pill Detection - Grade: **4.00**/4.00
- **Top 5 AI Solutions in AI Awards 2022**: One of five best solutions in AI Awards 2022 - Vietnam AI Day 2022, held by VNExpress Press, AI4VN with solution: "VAIPE: Protective healthcare monitoring and supporting system for Vietnamese"
- **The first prize in SoICT-IBM-Hackathon 2021**: The first prize in Call For Code Track of SoICT-IBM-Hackathon 2021 with the project entitled "A platform for forecasting floods based on sensor system, applying deep neural network."

References

- **Minh N. Do, Professor**:
  Thomas and Margaret Huang Endowed Professor, Department of Electrical and Computer Engineering
  Affiliate Professor, Departments of Bioengineering, Computer Science, and College of Medicine
  University of Illinois at Urbana-Champaign (UIUC)
  Personal Webpage: https://minhdo.ece.illinois.edu/
  ORCID URL: https://orcid.org/0000-0001-5132-4986
- **Lam M. Nguyen, PhD**:
  Staff Research Scientist, IBM Research, Thomas J. Watson Research Center, New York, USA
  Personal Webpage: https://lamnguyen-mltd.github.io/
  Google Scholar URL: https://scholar.google.com/citations?user=DeFL5Q8AAAAJ