Duy A. Nguyen

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RESEARCH INTERESTS

Robust and trustworthy multimodal learning (missing modalities, uncertainty estimation, reliable vision-language models) and efficient, controllable generative models (diffusion and flow matching, distillation, multi-identity personalization). **Seeking a Summer 2027 research internship.**

EDUCATION

University of Illinois Urbana-Champaign — Champaign, IL
Ph.D. in Computer Science (GPA 3.98/4.00) — *Aug 2023 – Present (expected May 2028)*
Advisor: Prof. Minh N. Do Co-advisor: Prof. Khoa D. Doan (VinUniversity)

Hanoi University of Science and Technology — Hanoi, Vietnam
Engineer's Degree in Information and Communication Technology (GPA 3.77/4.00, top 3.3%) — *Sep 2018 – Sep 2022*
Thesis: knowledge-graph-assisted pill detection (grade 4.00/4.00, Best Presentation Award)

EXPERIENCE

Cantina Labs — Remote
Research Scientist Intern — *May 2025 – Present*

- First author of **Troupe**, which scales multi-identity image generation to crowds of up to 20 people from one reference photo each, using local identity conditioning on a frozen few-step backbone. It reaches the highest average identity similarity on the new CrowdScale benchmark (2–20 people), closed models included, at about 37% of the strongest open baseline's FLOPs per image (under submission).
- Distilled in-house image and video diffusion models for faster inference while preserving generation quality; worked on identity-preserving generation.
- Developed and implemented research ideas for audio-driven lip-sync video generation of human and non-human characters.

University of Illinois Urbana-Champaign — Champaign, IL
Ph.D. Researcher — *Aug 2023 – Present*

- **Robult** (IJCAI 2025): lightweight, plug-in training objectives (soft positive-unlabeled contrastive loss and latent reconstruction) that keep multimodal models accurate under missing modalities and scarce labels.
- **SURE** (ACCV 2026): scalable uncertainty estimation for pretrained multimodal models with missing modalities.
- **Medical VLM reliability** (under review): built perturbation benchmarks across corruption types and severities and validated their realism through a clinician annotation study; studied calibration and selective prediction (answer, clarify, or abstain).
- **MiniELM** (Findings of ACL 2025): distilled an LLM into a lightweight e-commerce query rewriter, refined online with RL from LLM-simulated user feedback.

National Institute of Advanced Industrial Science and Technology (AIST) — Japan
Research Intern — *Oct 2022 – Dec 2022*

- Surveyed multimodal learning with missing modalities for healthcare applications.

VinUni-Illinois Smart Health Center — Hanoi, Vietnam
Research Assistant, VAIPE project — *Jan 2021 – Aug 2023*

- Built a multi-pill detector that fuses prescription knowledge graphs with visual features through graph neural networks: +9.4% COCO mAP over Faster R-CNN (PLOS ONE 2023).
- Co-organized the AI4VN VAIPE Challenge 2023: dataset, metrics and automated scorer.

BKAI Research Center, HUST — Hanoi, Vietnam
Research Assistant (part-time) — *Sep 2019 – Sep 2022*

- Ensemble deep-learning forecasting of river discharge and water level (Scientific Reports 2022, EAAI 2023); a single calibration model for many low-cost air sensors, integrated into a Hanoi air-quality monitoring system (EAAI 2024).
- Led the back-end and mobile teams of Fi-Mi, an AI-based air-quality monitoring and forecasting system.

PUBLICATIONS

Under submission / under review

Submitted **Duy A. Nguyen**, J. Chavan, D. Lee, M. Poustizadeh, L. L. Peña, S. Huang, L. Jiang, K. D. Doan, J. C. Boothe Rabek, T. Mertens, S. Shukla. "Troupe: Scaling Multi-Identity Generation to Crowds on a Frozen Few-Step Backbone." Under submission, 2026.

Submitted **Duy A. Nguyen**, T. T. Nguyen, A.-T. Nguyen, M. N. Do, K. D. Doan. "When Should Medical VLMs Answer? Reliability under Deployment Perturbations." Under review, 2026.

Conference

ACCV 2026 **Duy A. Nguyen**, D. H. Quan, K. D. Doan, M. N. Do. "SURE: Scalable Uncertainty Estimation for Pretrained Multimodal Models with Missing Modalities." Asian Conference on Computer Vision (ACCV), 2026.

IJCAI 2025 **Duy A. Nguyen**, A. Kamboj, M. N. Do. "Robult: Leveraging Redundancy and Modality-Specific Features for Robust Multimodal Learning." International Joint Conference on Artificial Intelligence (IJCAI), 2025.

ACL Findings **Duy A. Nguyen**, R. K. Mohan, S. Yang, P. S. Akash, K. C.-C. Chang. "MiniELM: A Lightweight and Adaptive Query Rewriting Framework for E-Commerce Search Optimization." Findings of the Association for Computational Linguistics (ACL Findings), 2025.

ICDM 2024 **Duy A. Nguyen**, T. H. Tran, H. H. Pham, P. L. Nguyen, L. M. Nguyen. "Improving Time Series Encoding with Noise-Aware Self-Supervised Learning and an Efficient Encoder." IEEE International Conference on Data Mining (ICDM), 2024.

Journal

EAAI 2024 **Duy A. Nguyen**, T. H. Phung, T. D. Nguyen, H. H. Pham, K. Nguyen, P. L. Nguyen. "GAMMA: A Universal Model for Calibrating Sensory Data of Multiple Low-Cost Air Monitoring Devices." Engineering Applications of Artificial Intelligence, 2024.

PLOS ONE **Duy A. Nguyen**, H. H. Pham, H. T. Trung, Q. V. H. Nguyen, T. N. Truong, P. L. 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**, D. V. Hoang, T. D. Nguyen, V. H. Vu, K. Nguyen, P. L. Nguyen, Y. Ji. "Attentional Ensemble Model for Accurate Discharge and Water Level Prediction with Training Data Enhancement." Engineering Applications of Artificial Intelligence, 2023.

Sci. Rep. **Duy A. Nguyen**, P. L. Nguyen, V. H. Vu, Q. V. Pham, V. H. Nguyen, M. H. Nguyen, T. H. Nguyen, K. Nguyen. "Accurate Discharge and Water Level Forecasting Using Ensemble Learning with Genetic Algorithm and Singular Spectrum Analysis-based Denoising." Scientific Reports, 2022.

Workshop

ICML-W 2026 **Duy A. Nguyen**, T. T. Nguyen, M. N. Do, K. D. Doan. "Answer, Clarify, or Abstain: Fine-Grained Selective Prediction for Medical VLMs." ICML Workshop on Efficient Multimodal Question Answering, 2026.

TECHNICAL SKILLS

Programming: Python, PyTorch
Machine learning: diffusion and flow matching, knowledge distillation, RL fine-tuning, vision-language models and LLMs, contrastive and self-supervised learning, uncertainty estimation and calibration, graph neural networks, object detection
Infrastructure: multi-GPU training and evaluation on Kubernetes clusters

HONORS AND AWARDS

- Second Prize, National Science and Technology Awards for Students in Higher Education Institutions, Vietnam 2022
- Top 5 AI Solutions, AI Awards 2022 (Vietnam AI Day), for the VAIPE healthcare monitoring system 2022
- Best Presentation Award, Undergraduate Thesis Defense, Hanoi University of Science and Technology 2022
- First Prize, Call for Code Track, SoICT-IBM Hackathon 2021

SERVICE

Conference reviewer: NeurIPS, ICML, ICLR (2023–2026); CVPR (2024–2026); AAAI (2023, 2026); KDD (2024)