HOANG-NHAT NGUYEN

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EDUCATION

Nanyang Technological University (NTU) - Singapore January 2026 - Present
Doctor of Philosophy in Computer Science

Hanoi University of Science and Technology (HUST) - Viet Nam October 2020 - August 2024
Bachelor of Mathematics and Informatics - **Talented Program** GPA: **3.64/4.00** - **Excellent** Degree

RESEARCH EXPERIENCES

Research Engineer March 2024 - Present
Samsung Research and Development Center Viet Nam | Hanoi, Viet Nam.

- Proposed and implemented an architecture that achieves an identical twin facial verification accuracy of 92.3% (3.4% higher compared to SOTA) on the ND-TWIN dataset by augmenting ViT self-attention with hierarchical cross-attention over semantic facial regions. Authored a research article based on the findings. **Nhat Nguyen-Hoang**, "AHAN: Asymmetric Hierarchical Attention Network for Identical Twin Face Verification", *Proceedings of the 2026 AAAI Conference on Artificial Intelligence*. Accepted for publication.
- Prevented sensitive data leaks across factory imagery, reducing manual inspection time by 80%, by developing a model that detects confidential components (e.g., unreleased hardware, circuit boards) before public use. Improved model robustness by 35% in unseen components by implementing out-of-distribution generalization and continual learning techniques.
- Reduced false negatives of X-ray inspection by 27% by deploying real-time detection models capable of recognizing occluded and multi-scale electronic parts on conveyor belt imagery.

Research Assistant (Independent Collaboration) March 2024 - Present
Supervisor: Assoc. Prof. Nguyen Thi Ngoc Anh.

- Conducting research focusing on Reinforcement Learning with Verifiable Rewards (RLVR) to enhance LLM's document retrieval and reasoning capabilities for contradiction detection and comprehensive legal document analysis.

Research Assistant October 2023 - March 2024
CMC Research Institute for Applied Technology | Hanoi, Viet Nam.
Supervisor: Assoc. Prof. Nguyen Thi Ngoc Anh.

- Achieved 92.15% accuracy in automated legal authority verification (improved 3.85% against the SOTA RAG method) by proposing a multi-hop chain-of-evidence reasoning framework combining knowledge graphs and domain ontologies.
- The resulting system has been finalized both in production, reducing the manual workload of legal experts and a manuscript under review at a journal:
Nhat Nguyen-Hoang, Thi-Hoa-Hue Nguyen, Minh Tuan Dang, Ngoc Anh Thi Nguyen. Automated Legal Authority Verification through Hierarchical Knowledge Graphs and Chain-of-Evidence Reasoning. *Under review.*

WORK EXPERIENCES

AI Engineer Intern November 2023 - March 2024
Varmeta | Hanoi, Vietnam.

- Co-developed a robust ETL pipeline that aggregated and cleaned multi-source API transaction data and integrated results into a centralized database for downstream analytics and model training. Accelerated transaction data processing and storage by 2× by implementing batching and parallel processing.

- Developed a chargeback detection model that leverages historical transaction patterns to identify fraudulent or disputed payments, enabling proactive risk mitigation and data-driven decision making.

PUBLICATIONS

- **Nhat Nguyen-Hoang**, "AHAN: Asymmetric Hierarchical Attention Network for Identical Twin Face Verification", *Proceedings of the 2026 AAAI Conference on Artificial Intelligence*. Accepted for publication.
- Ngoc Bach Pham, Linh Nguyen Duy, Bao Bui Quoc and **Nhat Nguyen Hoang**, "Integrating Computational Advertising with Guaranteed Display for Enhanced Performance in Wi-Fi Marketing," *Annals of Computer Science and Information Systems*, 42, 63-69, 2024. doi: 10.15439/2024R109.
- Thi-Hoa-Hue-Nguyen and **Hoang Nhat Nguyen**, "A Knowledge Graph-Based Framework for Personalized Course Recommendations in Higher Education," *2025 8th International Conference on Artificial Intelligence and Big Data (ICAIBD)*, 853-858, 2025. doi: 10.1109/ICAIBD64986.2025.11082069.

KEY PROJECTS & COMPETITIVE ACHIEVEMENTS

Top 4 Finalist | HUST - SoICT Hackathon — December 2024

- Task: Vietnamese Legal Document Retrieval, Source Code.
- Achieved MRR@10 score of 0.7458 in private test set by developing a hybrid retrieval system includes fine-tuning bi-encoder and cross-encoder models with domain-specific legal data; vocabulary trimming and data augmentation techniques for legal document retrieval.

First Prize Winner | HUST - SAMI AI Challenge — November 2023

- Task: SAT-Level Mathematics Question Answering (Multiple Choice), Source Code.
- Achieved 39.60% accuracy on SAT-level mathematics questions by fine-tuning Flan-T5 models and implementing a hybrid approach combining multiple model variants for different question types.

Resumé MatchMaker: Job Description-to-CV Recommendation | Source Code — August 2023

- Extract key elements from CVs and JDs, resulting in a 20% reduction in processing noise. Trained a Word2Vec model to effectively capture contextual relationships and enhance the system's ability to match relevant skills and experiences between CVs and JDs.

AWARDS & RECOGNITION

- **Samsung Talent Program Scholarship** — August 2023
  Awarded to the top **1%** of applicants.
- **HUST Study Encouragement Scholarship** — July 2022 & May 2024
  Awarded to the top **4.5%** of students for academic excellence.
- **IELTS Academic**: **7.0** — April 2024