

Nguyen Hoang Ha

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EDUCATION

Hanoi University of Industry

Master of Science in AI Engineering

Hanoi, Vietnam

2025 – Present

- Focus: Large Language Model applications, advanced computer vision, and deep learning optimization
- Coursework: Advanced Machine Learning, Natural Language Processing, Reinforcement Learning, Statistical Learning Theory

Thanh Do University

Bachelor of Science in Information Technology — GPA: 3.5/4.0

Hanoi, Vietnam

2021 – 2025

- Coursework: Data Structures & Algorithms, Computer Vision, Database Systems, Artificial Intelligence, Linear Algebra, Probability & Statistics
- Completed two undergraduate research theses in deep learning and computer vision

RESEARCH & PUBLICATIONS

Comparative Study of Deep Learning Methods for Rice Leaf Disease Detection

Mar. 2025

- Conducted a comparative evaluation of YOLOv8, Faster R-CNN, and SSD architectures for automated rice leaf disease detection on a custom dataset of 8,040 annotated images collected from Vietnamese rice paddies
- Designed and implemented a complete data pipeline: field image acquisition, multi-class annotation (4 disease categories), and augmentation strategies including mosaic, mixup, and geometric transforms
- Achieved state-of-the-art mAP@50-95 of 0.732 with YOLOv8n at 1,873 FPS on NVIDIA GPU, outperforming Faster R-CNN (0.681) and SSD (0.624) on both accuracy and inference latency
- Paper: nguyenha.online/research/rice-disease-detection

Object Detection, Tracking and Analysis in Video: CNN vs. YOLOv8

Aug. 2024

- Performed a systematic benchmark of Faster R-CNN (ResNet-101 backbone) and YOLOv8 on a custom classroom surveillance dataset with 1,200+ frames under varying illumination and occlusion conditions
- Demonstrated YOLOv8 achieves 85.71% detection accuracy versus 71.43% for Faster R-CNN, with 56× faster inference (142 FPS vs. 2.5 FPS) and superior robustness under low-light conditions
- Implemented multi-object tracking using DeepSORT integration with YOLOv8, enabling real-time person counting and movement trajectory analysis in classroom environments
- Paper: nguyenha.online/research/object-detection-video

PROJECTS

RAG-Based Personal Knowledge Base | *Python, LangChain, FAISS, OpenAI API*

2025

- Built a Retrieval-Augmented Generation system for semantic search over personal documents using sentence-transformer embeddings and FAISS vector indexing
- Implemented chunking strategies (recursive, semantic) and evaluated retrieval quality using MRR and Recall@K metrics

OpenRecon — OSINT Intelligence Dashboard | *Python, API Integration, Data Aggregation*

2025

- Designed an open-source intelligence gathering tool that aggregates data from multiple public APIs for reconnaissance and threat analysis
- Implemented automated data correlation pipelines and anomaly detection using statistical methods on aggregated datasets

TECHNICAL SKILLS

Languages: Python, C/C++, SQL

ML Frameworks: PyTorch, TensorFlow, Keras, Ultralytics (YOLOv8), Scikit-learn, Hugging Face Transformers

Computer Vision: OpenCV, Albumentations, LabelImg, Roboflow, CVAT

Data Science: NumPy, Pandas, Matplotlib, Seaborn, Jupyter, Weights & Biases

LLM / NLP: LangChain, FAISS, OpenAI API, Prompt Engineering, RAG Pipelines

Infrastructure: Git, Docker, Linux, CUDA, NVIDIA TensorRT, Google Colab, VS Code

LANGUAGES

Vietnamese: Native

English: Fluent (professional working proficiency)