

Dang Quang Nhat

Artificial Intelligence Student | Computer Vision & ML Systems

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Summary

Artificial Intelligence undergraduate focused on computer vision research and ML systems. Experienced in designing metrics for tiny-object detection, conducting reproducible experiments, and building GPU-accelerated pipelines for video analytics, tracking, and retrieval-augmented generation.

Education

FPT University, B.Sc. in Artificial Intelligence – Da Nang, Vietnam

Sept 2024 – Sept 2027

- GPA: **8.93 / 10.0**
- Relevant coursework: Deep Learning, Computer Vision, Machine Learning, Information Retrieval, and Data Structures & Algorithms

Technical Skills

Programming: Python, SQL

Machine Learning / DL: PyTorch, scikit-learn, LightGBM, XGBoost, Hugging Face Transformers

Computer Vision: YOLOv8, YOLO11, Faster R-CNN, OpenCV, Object Tracking

ML Systems: FastAPI, Celery, Redis, Docker, FFmpeg, GPU Inference

Retrieval & LLMs: BM25, Dense Retrieval, HyDE, Cross-Encoder Reranking

Data & Tools: MongoDB, MySQL, Cloudflare R2, Git, LaTeX

Languages: Vietnamese (native), English (IELTS 6.0)

Research & Selected Projects

TrafficFlow — AI-Powered Vehicle Counting Platform

May 2026 – July 2026

Role: AI / ML Systems Engineer. Built an end-to-end traffic analytics platform for uploaded videos and live YouTube/HLS streams.

- Owned the core AI pipeline covering FFmpeg ingestion, ROI preprocessing, YOLO GPU inference, detection filtering, tracking, lane association, vehicle counting, and annotated output rendering.
- Designed a low-latency live-streaming path with exact raw-frame reads, stale-frame filtering, and latest-frame scheduling to prevent backlog during YouTube/HLS burst and stall delivery.
- Implemented timestamp-aware Kalman tracking with time-based expiration, minimum-hit confirmation, and multi-criteria association for stable live vehicle IDs.
- Stabilized YOLO11m live inference at **15 FPS**, with benchmarked frame age of approximately **0.7–1.3 ms** and inference wall time of **9–18 ms** without sustained latency buildup.

Advanced RAG Pipeline for PPTX Course Materials

Apr 2026 – May 2026

Designed a retrieval-augmented generation pipeline for question answering over Deep Learning lecture slides, focusing on document structure, retrieval quality, reranking, context ordering, and citation grounding.

- Built a PPTX ingestion pipeline that extracts slide-level content, preserves source metadata, and enriches each chunk with surrounding slide context before indexing.
- Improved retrieval coverage with **multi-query generation**, **HyDE**, dense search, and **cross-encoder reranking** for underspecified or vocabulary-mismatched questions.
- Implemented citation-aware generation with source mapping, U-shaped context assembly, FastAPI serving, Web-Socket token streaming, and Docker Compose deployment.

Tiny Object Detection — ALW and SA-ALW Metrics

Jan 2026 – present

Developed bounding-box similarity metrics for maritime tiny-object detection on SOD-TinyPeopleInSea, where 92% of objects are smaller than 32 px.

- Designed **ALW (Anisotropic Log-Wasserstein Distance)** with per-axis position normalization and log-ratio shape terms to improve localization for tiny, elongated objects.
- Extended ALW to **SA-ALW**, adding parameter-free scale-adaptive temperature and position weighting to support objects from 2 px to 288 px.
- Built a controlled Faster R-CNN + ResNet-50-FPN + RFLA training harness and 6-configuration ablation to isolate each metric component.
- Achieved **AP 0.098** and **AP50 0.306**, outperforming IGWD by **+11.9% AP** and **+15.8% AP50** among Gaussian Wasserstein metrics in the controlled benchmark.

Leadership & Activities

President, FU-DEVER Technology Club, FPT University Da Nang – Da Nang, Vietnam

Dec 2025 – present

- Joined the Human Resources team in September 2024 and became President in December 2025; now lead a **100+ member** student technology club across executive operations, member development, and technical activities.
- Organized **3 technical workshops** with 20–30+ attendees each, including an AI-assisted software development workshop co-hosted with the university's AI department.
- Established collaborations with **ITSC** and **GDG Cloud** to coordinate technical speakers and community events.

Project Lead, Shine Team — "Bật nụ cười lên" Charity Project – Da Nang, Vietnam

Jan 2026 – Apr 2026

- Led a **14-member team** responsible for planning, budgeting, fundraising, and direct coordination with the Làng Hy Vọng school board.
- Delivered **120+ gifts** and hosted an on-site event for approximately **60 attendees**, raising more than **VND 12 million** from a **VND 4.2 million** operating budget.

Volunteer Trainer & Mentor, FPT University Da Nang Robotics Team – Da Nang, Vietnam

May 2025 – July 2025

- Mentored students in AWS PartyRock, LLMs, AI agents, image generation, Arduino assembly, and AI-assisted coding, guiding one team to the **national finals** of the **FPTU AI & ROBOTICS CHALLENGE 2025**.

Honors & Awards

- **Excellent Student Award**, FPT University — 3 consecutive semesters (Summer 2025, Fall 2025, Spring 2026)
- **Second Prize**, Da Nang City-level Mathematics Competition for Excellent Students (2024)
- **Third Prize**, School-level English Debate Contest, Hoang Hoa Tham High School (2024)