AI Researcher

Tien-Dat Nguyen

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A highly motivated AI practitioner with a profound passion for Generative AI in Computer Vision. My primary professional goal is to contribute to the development and application of cutting-edge generative models to solve complex visual challenges, create novel visual experiences, and push the boundaries of what's possible in AI-driven content generation and understanding.

Experience

AI Intern *Institute of IT, Academy of Military Science and Technology* 07/2025 – Present

AI Research Development Internship

Key Contributions

- Developed and implemented end-to-end object detection and image generation pipelines.
- Contributed to the construction, preprocessing, and augmentation of large-scale datasets.
- Assisted in deploying and managing AI platforms using containerization (Docker) and orchestration (Kubernetes).

Tech Stack Python, PyTorch, Docker, Kubernetes, Object Detection, Image Generation

Leader Mentor *Vision and Learning Laboratory* 09/2023 – Present

AI Research Mentorship Academic Leadership Research

Key Contributions

- Mentored graduate students and new undergraduate members on fundamental AI concepts, providing a foundation understanding of Image Classification and Object Detection.
- Led research and development on advanced models (e.g., YOLO series, Transformers) for computer vision applications.
- Organized and conducted technical workshops and code reviews to enhance team-wide skills and foster a collaborative environment.

Tech Stack Mentorship, Leadership, Image Classification, Object Detection, PyTorch, YOLO, Git

Projects

Self-Research *NAE_TransDQN: A Hybrid Transformer and Deep Reinforcement Learning Approach for Dynamic Oil Price Prediction* 06/2025

Dynamic Pricing Prediction AI Project; Reinforcement Learning for Time-Series Forecasting

Key Contributions

- Designed NAE_TransDQN: a hybrid Transformer–DQN model for time-series trading policy learning.
- Built a data pipeline with NLP-based sentiment scoring (FinBERT, DistilBERT) from multi-source news.
- Developed a full-stack app (React + Flask), deployed via Docker and Triton Inference Server.
- Achieved RMSE < 0.35 by benchmarking ML/RL models with advanced feature engineering.

Tech Stack PyTorch, Reinforcement Learning, Transformers, React, Flask, Docker, NVIDIA Triton, Scikit-learn

Project Lead *Driver Monitoring System (DMS) Project* **02/2025**

Driver Monitoring System AI Project; Real-time Safety System

Key Contributions

- Led end-to-end development of a real-time DMS enhancing driver safety and alertness.
- Engineered AI modules (PyTorch/TensorFlow, MediaPipe) for drowsiness detection, gaze tracking, and distraction alerts.
- Developed a Streamlit dashboard for real-time feedback and system monitoring.
- Architected the data pipeline (camera input to AI inference & alerts), optimizing for low latency.

Tech Stack PyTorch, TensorFlow, MediaPipe, Streamlit, Python

Self-Project *End-to-End Image Retrieval for Vietnamese* **01/2025**

Image Retrieval Multi-modal AI Project; Vietnamese Text-to-Image Retrieval

Key Contributions

- Built a multi-modal CLIP-style model in PyTorch for linking Vietnamese text and images.
- Unified and preprocessed multiple vision-language datasets (UIT-ViLC, UIT-EVJVQA).
- Boosted retrieval accuracy via encoder experiments (Swin, phoBERT) and FAISS integration.
- Deployed a full-stack system with Flask API, web UI, and Docker containerization.

Tech Stack PyTorch, Hugging Face Transformers, FAISS, Timm, Flask, Docker, Python

Project Lead *AI Lung Disease Diagnosis System Project* **10/2024**

AI Lung Disease Diagnosis System AI Project; Medical Imaging Analysis

Key Contributions

- Led development of an AI system for early lung disease diagnosis from medical imagery (X-rays, CT scans).
- Developed U-Net models (PyTorch) for identifying and localizing pathological indicators.
- Built a Streamlit web app for image upload, AI prediction visualization, and diagnostic support.

Tech Stack PyTorch, U-Net, Streamlit, Python, Medical Imaging

Self-Project *VAL-AutoLabelImg: Automated Labeling Tool* **02/2024**

Automated Object Detection Labeling Tool Open-Source Tool; Computer Vision; MLOps

Key Contributions

- Integrated SOTA detectors (YOLOv8–v10, RT-DETR) into LabelImg to automate and speed up labeling.
- Enabled support for custom weights and class configs via YAML-based extensibility.
- Containerized with Docker and published to Docker Hub for easy reuse and deployment.

Tech Stack Python, PyTorch, YOLOv8/v9/v10, RT-DETR, Docker, PyQt, Git LFS

Core Developer *AI Face Attendance & Anti-Cheating System Project* **08/2023**

Face Attendance & Anti-Cheating AI Project; Computer Vision Pattern Recognition; Tracking

Key Contributions

- Architected and led development of an AI system for automated face attendance and real-time anti-cheating detection.
- Engineered OpenPose-based human pose estimation modules for student posture analysis and suspicious activity detection.
- Developed RNN/LSTM models to process temporal pose data for identifying cheating behaviors.

Tech Stack OpenPose, RNN, LSTM, PyTorch/TensorFlow, Computer Vision

Education

B.Sc. in Computer Science (Expected) *Hung Yen University of Technology and Education, Vietnam* **2022 - Present**

- **GPA**: 3.73
- **Related coursework**: Computer Vision, Data Structures, Machine Learning, Deep Learning, Probability and Statistics, Software Engineering.
- Top 20 IT Students in Academic Year (2023-2025)

Publications

Article(s)

- **Dat, N. T.**, Phuc, N. T., & Chuan, P. M. (2023). APPLICATION OF MACHINE LEARNING IN IMAGE RECOGNITION TO DETECT SOME ABNORMALITIES IN THE EXAMINATION ROOMS. *Journal of Applied Science and Technology, 40*, 27-32.
- Le, T. H., Tran, D. T. H., Hoang, Q. V., Nguyen, D. T. A., Nguyen, C. T., **Nguyen, T. Dat.**, ... & Nguyen, T. K. (2024, November). An Efficient Approach for Stink Bug Detection. In *International Conference on Advances in Information and Communication Technology* (pp. 745-752). Cham: Springer Nature Switzerland.

Submission(s)

- **Nguyen, Tien-Dat**. (2025). "NAE TransDQN: A Hybrid Transformer and Deep Reinforcement Learning Approach for Dynamic Oil Price Prediction." *Transportation Research Record*.
- Pham, T-H., Tran, D-T-H., Giang, T-H., Nguyen, T-K., **Nguyen, T-D.**, & Le, T-H. (2025). "A Comparison of Semantic Segmentation Approaches for Pothole Detection." *Submitted to the International Conference on Smart Technology in Industry 4.0 (STAIS 2025)*.
- Luu, T. H. N., Nguyen, T. P., **Nguyen, T. Dat.**, Le, T. N., Nguyen, N. T., Luu, H., ... & Nguyen, T. K. (2024, November). Vietnamese Bra Size Classification with Machine Learning.
- **Nguyen, Tien. Dat.**, Nguyen, Trung. Kien. From YOLOv1 to YOLO11: A Comprehensive reviews of YOLOs model.

Skills

Proficient In:

- **Languages:** Python
- **Machine Learning / AI Frameworks:** TensorFlow, PyTorch, Numpy, Scikit-learn, Huggingface Transformers
- **Tools & Platforms:** Docker, Git, LaTeX
- **Databases:** MySQL, SQL Server
- **Operating Systems:** Linux, Windows

Familiar With:

- **Web Development:** NodeJS, HTML, CSS
- **Languages:** C#
- **Cloud Platforms:** AWS S3, Nvidia Triton Inference Server

Soft Skills:

- Leadership, Team Collaboration, Technical Writing, Research & Analysis, Problem-Solving

Certifications & Awards

- **Second Prize**, School-Level Scientific Research Competition (2025) – *Hung Yen University of Technology and Education (UTEHY)* – Mar 2025
- **Paper Accepted**, The International Conference on Information and Communication Technology and Applications (ICTA) 2024 – Dec 2024
- **Second Prize**, School Start-up Award – *Hung Yen University of Technology and Education* – Nov 2024
- **Second Prize**, School-Level Scientific Research Competition (2024) – *Hung Yen University of Technology and Education (UTEHY)* – Apr 2024
- **Paper Accepted**, UTEHY Journal of Applied Science and Technology – Dec 2023
- **Start-up Incentive Award** – *Hung Yen University of Technology and Education (UTEHY)* – Oct 2023

Languages

Vietnamese: Native
English: IELTS 6.5 (Expected)