Tien-Dat Nguyen

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ABOUT ME

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 Research Intern   **07/2025 – Present**

Institute of Information Technology, Academy of Military Science and Technology

- **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).

Technologies: *Python, PyTorch, Docker, Kubernetes, Object Detection, Image Generation*

Leader & Mentor   **09/2023 – Present**

Vision and Learning Laboratory

- **Mentored** graduate students and new undergraduate members on fundamental AI concepts, providing a foundational 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.

Technologies: *Mentorship, Leadership, Image Classification, Object Detection, PyTorch, YOLO, Git*

PROJECTS

Oil Dynamic Pricing Prediction - Lead Researcher   **06/2025**

Reinforcement Learning for Time-Series Forecasting

- **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 Infer‑ence Server.
- **Achieved** RMSE < 0.35 by benchmarking ML/RL models with advanced feature engineering.

Technologies: *PyTorch, Reinforcement Learning, Transformers, React, Flask, Docker, NVIDIA Triton, Scikit‑learn*

Driver Monitoring System (DMS) - Project Lead   02/2025
Real‑time AI Safety System
- **Led** end‑to‑end development of a real‑time DMS enhancing driver safety and alertness.
- **Engineered** AI modules (PyTorch/TensorFlow, MediaPipe) for drowsiness detec‑tion, 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.

Technologies: *PyTorch, TensorFlow, MediaPipe, Streamlit, Python*

End‑to‑End Image Retrieval for Vietnamese - Self‑Project   01/2025
Multi‑modal AI for Vietnamese Text‑to‑Image Retrieval
- **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 a Flask API, web UI, and Docker containeriza‑tion.

Technologies: *PyTorch, Hugging Face Transformers, FAISS, Timm, Flask, Docker, Python*

AI Lung Disease Diagnosis System - Project Lead   10/2024
AI for Medical Imaging Analysis
- **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 in‑dicators.
- **Built** a Streamlit web app for image upload, AI prediction visualization, and diag‑nostic support.

Technologies: *PyTorch, U‑Net, Streamlit, Python, Medical Imaging*

VAL‑AutoLabelImg: Automated Labeling Tool - Self‑Project   02/2024
Open‑Source Tool for Computer Vision & MLOps
- **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 extensi‑bility.
- **Containerized** with Docker and published to Docker Hub for easy reuse and de‑ployment.

Technologies: *Python, PyTorch, YOLOv8/v9/v10, RT‑DETR, Docker, PyQt, Git LFS*

Vietnamese Visual Question Answering (VQA) with BLIP - Self‑Project   02/2024
Multi‑modal AI for Natural Language Processing

- **Optimized** a Vietnamese BLIP‑based VQA model, reducing inference time by 40% while maintaining SOTA accuracy on culturally relevant queries.
- **Adapted** BLIP architecture (vision transformer, text encoder/decoder) to process Vietnamese questions and generate relevant answers for images.

Technologies: *PyTorch, Hugging Face Transformers, BLIP, Vision Transformer (ViT), NLP*

 AI Face Attendance & Anti‑Cheating System - **Lead Developer**   8/2023
AI for Computer Vision & Pattern Recognition

- **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.
- **Developed** RNN/LSTM models to process temporal pose data for identifying cheat‑ing behaviors.

Technologies: *OpenPose, RNN, LSTM, PyTorch, TensorFlow, Computer Vision*

 Deep Learning for News Category Classification - **Lead Developer**   4/2023
AI for Natural Language Processing

- **Spearheaded** development of a system for automatic Vietnamese news category classification.
- **Implemented** BiGRU and BiLSTM networks from scratch for contextual information capture.
- **Engineered** an end‑to‑end NLP pipeline: text preprocessing, feature engineering (Word2Vec), model training, and evaluation.

Technologies: *BiGRU, BiLSTM, Word2Vec, Python, NLP, Scikit‑learn*

EDUCATION

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

- **GPA**: 3.73/4.0
- **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 LEARN‑ING IN IMAGE RECOGNITION TO DETECT SOME ABNORMALITIES IN THE EXAM‑INATION 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 Commu‑nication Technology* (pp. 745‑752). Cham: Springer Nature Switzerland.

Submission(s)

- **Nguyen, Tien‑Dat**. (2025). "NAE TransDQN: A Hybrid Transformer and Deep Re‑inforcement 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:** PyTorch, TensorFlow, Scikit‑learn, Hugging Face, Numpy
- **Tools & Platforms:** Docker, Git, LaTeX, NVIDIA Triton Inference Server
- **Databases:** MySQL, SQL Server
- **Operating Systems:** Linux, Windows

Familiar With

- **Web Development:** React, Flask, NodeJS, HTML, CSS
- **Languages:** C#
- **Cloud Platforms:** AWS S3

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 (UTEHY)* – 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