

# 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

### Lead Researcher *Oil Dynamic Pricing Prediction Project*

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-AutoLabellmg: 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 Labellmg 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

## Self-Project *Deep Learning for News Category Classification Project*

04/2023

Classification    AI Project; Natural Language Processing

### Key Contributions

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

Tech Stack    BiGRU, BiLSTM, Word2Vec, Python, NLP, Scikit-learn

## 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 (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

Languages

Vietnamese: Native  
English: IELTS 6.5 (Expected)