

# DUC AN NGUYEN

Computer Vision and Edge AI Engineer

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 Tarbes, France

## SUMMARY

Computer Vision & Edge AI Engineer with hands-on experience developing and deploying deep learning models across hardware platforms, from resource-constrained edge devices to server infrastructure. Experienced in real-time computer vision, model optimization, and edge deployment, with a strong focus on translating research into production-ready AI systems.

## PROFESSIONAL EXPERIENCE

### FREELANCER

May 2026 - present

#### Computer Vision R&D | Infrared Object Detection

France

- Developed object-detection models for nighttime monitoring in low-contrast infrared imagery
- Analyzed detection failures across varying levels of contrast, noise, and image quality to guide model refinement

**Technologies:** Python, PyTorch, ONNX, TensorRT, Linux, Git, DVC

### PRODUCTION ENGINEERING LABORATORY

Feb 2023 - Jan 2026  
(3 years)

#### AI Researcher | Applied AI & Explainable AI

France

- Built an edge IoT monitoring system on NVIDIA Jetson Orin Nano and integrated a federated-learning workflow
- Designed an explainable AI method to interpret multimodal deep learning models using image, text, and numerical sensor data
- Developed an intrinsically explainable AI framework for system-level health monitoring and prognostics

**Technologies:** Python, TensorFlow, Git, Jetson Orin Nano, Docker, PostgreSQL, MQTT, Grafana

### NOVA INTELLIGENT TECHNOLOGY JSC

Oct 2021 - Jan 2023  
(1 year 4 months)

#### AI Engineer | Computer Vision ( [View Project ↗](#) )

Vietnam

- Architected and developed HydraNet, a multi-process, multi-threaded shared-backbone computer vision system, reducing overall GPU resource requirements (compute and VRAM) by 50%+ compared with running independent vision pipelines
- Validated and optimized the AI inference pipeline on memory-constrained 4 GB VRAM GPUs to resolve memory bottlenecks and improve computational efficiency before scaling
- Integrated object detection, face recognition, fire detection, and tracking into HydraNet, processing 24+ camera streams on one NVIDIA RTX A5000 at 5–10 FPS per stream
- Developed lightweight image processing algorithms to improve the preprocessing quality, accuracy and efficiency of AI inference pipelines

**Technologies:** Python, PyTorch, OpenCV, ONNX, TensorRT, Linux, Git, Docker, DVC

## PROFESSIONAL EXPERIENCE (CONTINUED)

### HO CHI MINH UNIVERSITY OF TECHNOLOGY

Aug 2018 - Aug 2021  
(3 years)

#### Research Engineer | Embedded Computer Vision Vietnam

*Project: Coffee Bean Sorting Machine - Jetson Nano / Raspberry Pi ( [View Project ↗](#) )*

- Designed and implemented an end-to-end real-time coffee bean sorting system, from hardware setup and image acquisition to a multi-process, multi-threaded vision pipeline
- Developed image enhancement, denoising, and segmentation algorithms for robust object isolation under non-uniform lighting and background conditions
- Investigated a CIELAB color space-based classification model using the Pocket algorithm, achieving over 92% accuracy under illumination changes
- Optimized embedded vision pipelines for memory usage and execution speed, sustaining 20+ FPS on NVIDIA Jetson Nano under constrained compute and memory resources

**Technologies:** C/C++, NVIDIA Jetson Nano, Raspberry Pi, OpenCV, MATLAB, Memory optimization

*Project: Embedded Fingerprint Recognition System - STM32 (C)*

- Implemented fingerprint enhancement, segmentation, thinning, and feature-extraction algorithms to extract reliable ridge features for matching under high-noise conditions
- Improved and adapted the Lin Hong matching algorithm for efficient fingerprint comparison
- Optimized memory and computational performance for deployment on STM32 microcontroller

**Technologies:** C/C++, STM32, MATLAB, Memory optimization

## SKILLS

**Programming & frameworks:** Python, C/C++, MATLAB, PyTorch, TensorFlow, OpenCV  
**Edge deployment:** TensorRT, TFLite, ONNX, Inference and Memory Optimization, NVIDIA Jetson, Raspberry Pi, STM32  
**Other tools:** Linux, Git, DVC, Docker, PostgreSQL, MQTT, Grafana

## LANGUAGES

English (B2-C1)  
Vietnamese (native)  
French (A2-B1)

## EDUCATION

**PhD, Toulouse INP**  
Industrial & Computer Engineering  
Specialization: Applied AI & Explainable AI

**Feb 2023 - Jan 2026**  
France

**M.Sc., Ho Chi Minh City University of Technology (Very good)**  
Electronic Engineering  
Specialization: Embedded Computer Vision

**Sep 2019 - Sep 2021**  
Vietnam

**B.S., Ho Chi Minh City University of Technology (Good)**  
Electronics and Telecommunications Engineering  
Specialization: Embedded Systems

**Sep 2014 - Apr 2019**  
Vietnam