(ALEX) TUNG NHI TRAN

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SUMMARY

Master of Information Technology (AI) candidate at UNSW with 3+ years of hands-on experience designing and deploying machine learning systems, from computer vision and anomaly detection to modern Retrieval-Augmented Generation (RAG) and LLMs. Published author in applied ML with proven ability to read research, adapt state-of-the-art methods, and deliver measurable business impact through scalable AI solutions.

EDUCATION

Master of IT, Major in AI, University of New South Wales (UNSW) Jun 2023 - Jun 2025
Relevant Coursework: Computer Vision, Natural Language Processing (Distinction).

B.E. (Telecommunications) of PFIEV, Ho Chi Minh University of Technology, Vietnam Sep 2014 - Sep 2019
Training Program of Excellent Engineers in Vietnam, cooperating with France - PFIEV
Degree Appendix co-signed by HCMUT and IMT Atlantique.

SKILLS

AI & Machine Learning	TensorFlow, PyTorch, Scikit-learn, Computer Vision, NLP, RAG.
Programming	Python, C++, R, JavaScript, Git/GitHub.
Backend & APIs	Flask, FastAPI, Gradio, Pydantic
Tools	Git/GitHub, Docker, SQL, Excel.

EXPERIENCE

Research Assistant Aug 2021 - Sep 2022
Université Saint-Louis - Bruxelles *Brussels, Belgium*

- **Engineered data validation pipelines** using R-based visualization tools to analyze and validate variable relationships between synthetic BEAMM dataset and real Belgian tax datasets.
- **Collaborated with economists** to identify demands and implement comments on variable interdependencies, leading to improved synthetic datasets for economic modeling.

AI Researcher & Lecturer Oct 2020 - Sep 2022
Dong A University *Da Nang, Vietnam*

- **Lectured** Introduction to Programming and supporting Calculus/Linear Algebra courses
- **Developed and deployed ML models** for anomaly detection and decision support systems using Autoencoders and Federated Learning, achieving 97%+ accuracy in production monitoring applications.
- **Collaborated cross-functionally with stakeholders** to develop project proposals, secure funding, and translate business requirements into technical ML solutions.

Python Developer Jan 2020 - Mar 2020
TMA Solutions *HCM, Vietnam*

- **Developed scalable Python applications** with focus on code maintainability, reliability, and performance optimization for production environments

PROJECTS

LLM Q&A Chatbot API — Flask/Gradio

- **Built production RAG architecture** using ChromaDB vector database, Multilingual E5 Large embeddings, and IBM Granite LLM via API, achieving ¡5s latency for context-aware Q&A.

- **Built scalable Flask/Gradio API** with monitoring hooks for live performance tracking and error logging.

Medical Image Segmentation - Breast Cancer Detection

- **Implemented U-Net architecture** for breast cancer detection in ultrasound images as part of UNSW Computer Vision coursework.
- **Optimized U-Net architecture** through channel hyperparameter tuning where varying channel numbers directly affected encoder-decoder performance for tumor detection, achieving 95.80% accuracy.

Ontology-Enhanced PCA Models Using Eurofidai ESG Dataset | UNSW Final Project

- **Developed ML pipeline** using PCA methods and advanced data preprocessing techniques for ESG (Environment, Social, Governance) variable analysis.
- **Optimized model performance** cutting variable matching time by up to 80% compared to manual processes through automated ML workflows.
- **Created technical guidelines and documentation** explaining PCA concepts and implementation for both technical and non-technical stakeholders.

Anomaly Detection in Smart Manufacturing | Published Research

- **Built and deployed 2 production ML systems**: VAE-based predictive maintenance system and AlexNet + Isolation Forest for production monitoring.
- **Achieved 97% accuracy** in anomaly detection across manufacturing processes.
- **Published findings** in "Machine Learning and Probabilistic Graphical Models for Decision Support Systems," CRC Press, 2022, pp. 34-61

ACHIEVEMENTS & PUBLICATIONS

Published Author: Machine Learning and Probabilistic Graphical Models for Decision Support Systems (CRC Press, 2022),

International Student Award: 15% tuition scholarship at UNSW.

International Engineering Program: Degree Appendix co-signed by HCMUT and IMT Atlantique (France)

Conference Presenter: 9th Scientific Research Conference of PFIEV - HCMUT Students (2019)

Certifications: IBM RAG and Agentic AI Specialization