DO MINH DUC, Master Student

Applying for: Graduate Program

(+84) 812-898-185 | Hanoi, Vietnam | duc.dm200158@gmail.com | Minh Duc Do

SUMMARY

- Highly motivated computer science graduate with extensive experience in Machine Learning (ML) and Deep Learning (DL).
- Proven track record of developing innovative solutions in Predictive Mdeling, Reinforcement Learning, and Image Classification.
- Skilled in Data Analysis, Algorithm Development, and Quantum Computing applications.
- Experienced in Cyper Security and Android Programming.
- Passionate about advancing research in ML and DL, with a strong foundation in various programming languages and technologies.
- Eager to contribute to cutting-edge projects and further knowledge in the field of Artificial Intelligence.

EDUCATION

Hanoi University of Science and Technology — Hanoi,Vietnam
Bachelor in Computer Science — 07/2020 - 07/2024
CPA — 3.71/4.00 **Korea Advanced Institute of Science and Technology — Daejeon, Korea
Bachelor in Computer Science — 02/2025- Now

EXPERIENCE

Software Engineer

Samsung RnD Vietnam

Hanoi, Vietnam — 06/2024 - Present

System Security Part

- Implement and improve features of the Android Security System.
- Participate in designing, implementing, and maintaining code within the Security Team.

Software Engineer Intern

Samsung RnD Vietnam

Hanoi, Vietnam — 03/2024 - 06/2024

Secure Vault

- Developed a secure vault for storing and delivering sensitive data within Android applications.
- Built a storage vault allowing applications to securely store sensitive data such as tokens and keys. Other applications can send API requests to store, request, modify, or delete data.
- Project consisted of three main modules: register, storage, and query. Developed workflows, core functionalities of the service, and managed a team of four members.
- Responsible for the register module, which allows other apps to register for the service. The app layer was built using Java, while the native layer was implemented with C++ using OpenSSL.
- Awarded Best Project by the Security Council.

Research Assistant

Korea Advanced Institute of Science and Technology

Daejeon, Korea — 02/2025 - Present

VITON - Virtual Tryon

Virtual try-on is a narrow research branch of the Generative Adversarial Network and Diffusion Model. However, in order to perform the Virtual try-on problem, there are other subproblems that need to be worked on, such as image segmentation or pose estimation, and many more subproblems.

Differential Privacy DL Optimizers Research

Right now, i am researching about the intersection lines between DP and DL.

Hanoi University of Science and Technology

Hanoi, Vietnam 11/2023 - 09/2024

Quantum Neural Network

- Built a small QNN library that includes classes such as Feedforward, CNN, and LSTM. Researched important formulas for training networks, including gradient calculations (using the shift parameter rule for derivatives in quantum computing).
- Network structures are similar to classical neural networks, and the classes can be combined with classical networks to form hybrid networks. Used a simulator for testing due to lack of access to a quantum computer, resulting in good outcomes due to the absence of noise.
- Applied Transfer Learning in QNN to classify MNIST images, using methods similar to classical approaches.
- Proposed the Quantum Quantization Aware Training (QQAT) method to enhance the efficiency of QNNs on resource-constrained devices.

MageCode - a code analysis system for the Bach Khoa Cyber Security Center

- Project submitted for the Student Research Conference. Consists of three modules: analyzing whether the code was written by a human or machine, checking for code plagiarism if written by a human, and checking for logical errors such as array overflows and division by zero.
- Responsible for the third module, using LLM for error checking and CodeQL from GitHub for static analysis.
- Project is still under development at the 405th floor of the Institute of Information and Communication Technology to become a full product.
- Served as the PM, proposed the idea (with support from professors), managed the team, and designed the main workflows (determining which module the source code should enter first, which tools to use for analysis, how to conduct checks, and identifying the target audience for the product).

Software Engineer Intern

Viettel Telecom

Hanoi, Vietnam 08/2023 - 11/2023

Viettel Enterprise Support System

- Analyzed VESS (Viettel Enterprise Support System) developed by the company in Odoo Python and produced technical documentation.
- Implemented various modules using Odoo.

RELEVANT PROJECTS

Introduction to ICT Project:

Adaptive Predictive Traffic Time Research

- **Research Focus**: Investigated solutions for the Adaptive Predictive Traffic Time problem.
- **Techniques Used**: Data analysis, predictive modeling.
- **System Development**: Developed a system to predict traffic conditions.
- **Algorithm Proposal**: Suggested adaptive algorithms to adjust predictions based on real-time traffic updates and external factors.

Discrete Math Project:

Reinforcement Learning Algorithm for Resource Provisioning

- **Research Focus**: Optimized resource provisioning in Mobile Edge Computing Networks.
- **Techniques Used**: Reinforcement learning algorithms such as Q-learning and Deep Q-Networks.
- **Dynamic Allocation**: Allocated resources dynamically based on network conditions and user demands.

OS principles Project:

Design and Build an OS Shell called "Tiny Shell"

- **Project Scope**: Designed and built a basic operating system shell.
- **Skills Developed**: Gained experience in OS principles and shell programming.

Al Project:

Snake Game AI Search Program

- **Development Focus**: Created an AI search program for the Snake game.
- **Algorithms Used**: Implemented A* and Minimax algorithms.
- **Strategy Implementation**: Developed strategies to maximize the snake's score, avoid collisions, and collect food.

ML Project:

Football Result Prediction Program

- **Project Focus**: Built a predictive model for football match results.
- **Techniques Used**: Machine learning algorithms like logistic regression and k-means clustering.
- **Data Analysis**: Analyzed historical match data and various influencing factors to forecast match outcomes.

Deep Learning Project:

Image Classification

- **Model Used**: Utilized Contrastive Language-Image Pre-Training (CLIP) for image classification.
- **Accuracy**: Developed a model capable of classifying images into predefined categories with high accuracy.

Project I:

Library Management Website

- **Technology Stack**: Explored C# and ASP.Net.
- **Development Focus**: Built a website to manage a library.

Project II:

IAM System Based on WSO2

- **Protocols Explored**: OpenID Connect, OAuth 2.0.
- **System Development**: Built an Identity and Access Management (IAM) system using the WSO2 platform.
- **Features Implemented**: Single Sign-On (SSO), user management, application management, and multi-factor authentication.

Project III:

Quantum Algorithm Research

- **Algorithm Focus**: Researched and implemented Grover's algorithm to find a marked value in an array.
- **Principles Explored**: Explored quantum computing principles and applied them to develop efficient search algorithms.

Cyper Security Project:

Cryptanalysis Using Markov Chain Rule and Genetic Algorithm

- **Techniques Used**: Applied the Markov chain rule and genetic algorithm to break substitution ciphers.
- **Algorithm Development**: Developed algorithms to analyze letter frequency patterns and employ evolutionary search strategies for cryptanalysis.

Graduation Thesis:

Quantum Neural Network

- **Integration Focus**: Built a quantum neural network applying transfer learning and quantization techniques.
- **Efficiency**: Explored the integration of quantum computing concepts with neural networks to enhance model efficiency and performance.

Student Research Conference:

Code Analysis

- **Distinguishing Code**: Analyzed code to distinguish between human-written and machine-generated code using CodeBERT.
- **Vulnerability Detection**: Detected code vulnerabilities using CodeQL, contributing to software security research.
- **Similarity Identification**: Investigated the use of Dolos to identify similarities between code snippets and known code repositories or authors.

SRV Project:

Samsung Internship Project

- **Project Focus**: Created a secure vault to securely store and deliver sensitive data in the Android environment using OpenSSL.

Embedded System Project:

Dinosaur Game on ESP32

- **Development Focus**: Developed a Dinosaur Game on the ESP32 microcontroller.

IoT Project:

Smart Home Using Arduino

- **Project Focus**: Developed a smart home system using Arduino.

SKILLS

Operations Research: Machine Learning, Deep Learning, Quantum Neural Network, Self - Supervised Learning | System Security | Static Analysis.
Programming Languages: Python, C/C++, Java.
Tools and Frameworks: | OpenSSL, Android Studio | PyTorch, NumPy, Pandas, Matplotlib, TensorFlow 2.0, PennyLane | LaTeX, GitHub, Git| Jupyter Notebook.

LANGUAGES

Vietnamese (Native)
English (Spoken & Written) : 7.5 IELTS, 930 Toeic

ADWARDS AND HONORS

- Prize for Student of 5 Merits [Hanoi University of Science and Technology]
- A-Level Scholarships Encouraging Study [Hanoi University of Science and Technology]
- Samsung Talent Program Scholarship [Samsung RnD Vietnam]
- Samsung Award for Excellent Intern [Samsung RnD Vietnam]