

# Vu Anh Duy

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## EDUCATION

<b>Université Claude Bernard Lyon 1</b> <i>Master's in computer science, Specialization in Artificial Intelligence (in progress)</i>	<b>Lyon, France</b> Expected August, 2026
<ul style="list-style-type: none"><li>• <b>Main courses:</b> Advanced Machine Learning, Multi-agents' systems, Bio-inspired AI, LLM &amp; LangChain, Argumentation Theory, Fullstack development</li></ul>	
<b>INSA Lyon</b> <i>Department of Materials Science and Engineering, Engineering Program</i>	<b>Lyon, France</b> 2019 - 2022
<b>High School Specializing in Natural Sciences (HSGS)</b> <i>Very good mention, specialization in Mathematics</i>	<b>Hanoi, Vietnam</b> 2016 - 2019

## PROFESSIONAL EXPERIENCE

<b>Airmium</b> <i>Student Internship</i>	<b>Lyon, France</b> Avril 2024 – Juillet 2024
<ul style="list-style-type: none"><li>• Analyzed air quality laboratory data management requirements.</li><li>• Proposed robust architectures for backup, archiving, and secure access (web &amp; mobile).</li><li>• Automated and digitalized processes, reducing manual operations and Excel dependency.</li></ul>	
<b>Mạnh Thái Limited Liability Company</b> <i>Student Internship</i>	<b>Hanoi, Vietnam</b> Avril 2024 – Juillet 2024
<ul style="list-style-type: none"><li>• Shipped computer equipment and provided technical support.</li><li>• Assembled and configured computers for local SMEs and resellers.</li></ul>	

## SELECTED PROJECTS

### Food Mining: Intelligent Data Analysis for the Identification of Culinary Cultures

Designed and developed a data analysis platform to identify and characterize global culinary cultures from over 250,000 recipes sourced from Food.com. Built data mining modules for large-scale food data extraction, structuring, and visualization. Implemented classification and clustering algorithms to uncover cultural trends, dietary habits, and correlations between ingredients, dishes, and regions. Explored potential extensions to integrate nutritional insights related to traditional Asian medicine.

### Vision Transformer for Image Restoration

Developed a Mini Vision Transformer model for reconstructing damaged 4×4 image patches. Designed and trained a neural network based on the Transformer architecture applied to computer vision, enabling image restoration from corrupted inputs. Implemented preprocessing, data augmentation, and performance evaluation pipelines on image datasets. Optimized the reconstruction workflow using advanced deep learning techniques to enhance visual quality and model robustness.

### Biomedical Text Classification Using Recurrent Neural Networks

Developed a biomedical text classifier based on a Recurrent Neural Network (RNN) using PyTorch. Designed and trained natural language processing models to extract and categorize textual information from specialized corpora. Implemented preprocessing, vectorization, and evaluation pipelines on real biomedical datasets. Achieved high accuracy in classifying scientific abstracts and automatically identifying medical topics, demonstrating the model's robustness in real-world applications.

### Intelligent Image Classification of Clothing and Digits Using Neural Networks

Developed an image classification model leveraging deep neural networks for the automatic identification of

fashion items and handwritten digits from standard datasets (Fashion MNIST, MNIST). Designed preprocessing and data augmentation pipelines to enhance model robustness. Trained and evaluated deep architectures on real test sets, achieving excellent accuracy and demonstrating the model's effectiveness for visual recognition across diverse contexts.

### **Intelligent Agents and Reinforcement Learning (Multi-Agent Systems)**

Developed a series of advanced projects focused on intelligent agents and reinforcement learning using Python and Jupyter Notebook. Implemented search algorithms, Deep Q-Networks (DQN), and policy evaluation strategies in simulated environments (e.g., Pacman, direct search). Applied Markov Decision Processes (MDP), value iteration, and Q-learning to solve complex sequential decision-making tasks. Conducted experimental analysis and performance optimization of agents in multi-agent systems and machine learning scenarios.

### **End-to-End Multi-Task Models for Argumentation**

Developed a comprehensive framework for **Assumption-Based Argumentation with Preferences (ABA+)**. Integrated a fine-tuned **DeBERTa-v2** model for the automatic detection of argument attacks. Implemented a flexible parser, normalization algorithms (cycle elimination, flattening, atomization), and minimal argument generation through forward chaining. Computed attacks according to the formal ABA+ semantics, distinguishing between standard and preference-reversed attacks. Designed a multi-format web interface featuring structured tables and interactive PyVis graphs.

### **Procedural Generation in Unity 3D (Bachelor's Final Project)**

Developed an interactive application in Unity (C#) featuring advanced object management, animations, and user interface components. Designed and implemented custom scripts for game logic, physics, and artificial intelligence. Utilized Unity's editing tools for scene organization, asset management, and performance optimization.

## **TECHNICAL SKILLS**

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**Languages :** Python (PyTorch, NumPy, LangChain), Java (Spring Boot, JADE), JavaScript (ES6+, React.js), C++, C#, SQL, HTML/CSS

**IA/ML:** Deep learning (CNN, Vision Transformer), multi-agent learning (JADE), bio-inspired AI (neural networks, evolutionary algorithms)

**Web Developpement:** Spring Boot, Node.js, Supabase, API REST, Chart.js, TailwindCSS

**Softwares & environnements :** Git, GitLab CI/CD, Docker, Jupyter Notebook, Visual Studio, Notion, Vercel, Microsoft Azure AI Studio

## **CERTIFICATIONS**

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- IBM Generative AI Engineering (2025)
- Meta Front-End Developer Specialization (2023)
- Google IT Support Certificate (2022)
- Le Cordon Bleu – Art and Science of Multi-Sensory Dining (2025)
- The Science of Gastronomy – University of Hong Kong (2023)

## **LANGUES**

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French: fluent (C1)

English: professional (C2)

Vietnamese: mother language