

# Minh-Huy Mai-Duc

[Homepage](#) • [minhhuymaiduc@gmail.com](mailto:minhhuymaiduc@gmail.com) • [linkedin/sabertoaster](https://www.linkedin.com/in/sabertoaster) • [github/sabertoaster](https://github.com/sabertoaster) • [orcid](#)

## EDUCATION

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**Artificial Intelligence** | *Bachelor* Aug 2023 - Present  
VNU University of Science, Ho Chi Minh, Vietnam GPA: 3.85/4.0

## EXTRACURRICULAR EXPERIENCE

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**HCMUS Google Developer Student Club** | *Web Specialist* Dec 2023 - Present

- Web Designer and Content Writer.

**AI VIET NAM** | *Community Member* Dec 2023 - Present

- An organization that host Artificial Intelligence and Data Science courses.
- Provide career networking and roadmaps for research in MSc, PhD.

**AIVN Research Group** | *Member* Jul - Sep 2024

- Summarize papers and do literature reviews about Cardiac MRI Reconstruction.
- Host introductory seminars about processing fMRI images.

**AngelHack Hackathon** |   | *Participant* Jun 2024

- Create a custom-labeled dataset using CVAT for South-east Asian beer products.
- Finetune YOLOv8 on custom datasets for real-time beers detection & classification.
- Build a website that analyzes crowd and staffs' emotion through ChatGPT's API.

**AI Challenge Hackathon (HCMC)** | *Participant* Sep 2024

- Extract video features with multiple SOTA models in Video Retrieval Task. (ViT-B16, ViT-B32, ViT-L14)
- Host and query database with Qdrant and FAISS.
- Build a searching system for Video Retrieval - Known Item Search (Textual)

## CERTIFICATES & KNOWLEDGE DEVELOPMENT

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**Coursera** | *Mathematics for Machine Learning* Feb 2024

**CS50** | *CS50's Introduction to Artificial Intelligence* Feb 2024

**learn@inasp** | *Getting Started with Writing and Publishing Your Research* Jun 2024

**Coursera** | *Machine Learning Specialization* Aug 2024

**STIC Talent Program** | *Science and Technology Track* Aug 2024

**VIASM Summer School on Deep Learning** | *Statistical Learning* Aug 2024

## SKILLS

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### Technical Skills |

- Language: C/C++, Python, SQL, HTML, CSS, Javascript, C#.
- Libraries & Frameworks: Numpy, OpenCV, Matplotlib, Pytorch, Pandas, SciPy, Streamlit, Unity.
- Machine Learning: Random Forest, KNN, Decision Tree, Boosting Algorithms, Regression & Classification Algorithms.
- Computer Vision: Image Processing, Feature Matching, Stereo Vision

### Soft Skills |

- **English:** Fluent | IELTS Academic (Jul 2022): 7.5
- **French:** Conversational
- Problem-solving, critical thinking, adaptability
- Hard-working, effective communication, willingness to learn

## PROJECTS

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### Image Depth | | AI Vietnam Capstone Project

Aug 2024

- Implemented multiple stereo matching algorithms for 3D depth reconstruction, including pixel-wise matching ( $\mathcal{L}_1/\mathcal{L}_2$  metrics) and window-based matching with cosine similarity optimization to handle illumination variations.
- Built a modular disparity map estimation system that processes stereo image pairs using OpenCV, supporting both grayscale visualization and color-mapped depth representation.
- Tech Stack: Python, OpenCV, NumPy, Computer Vision techniques.

### Image Retrieval | | AI Vietnam Capstone Project

Aug 2024

- Constructed image retrieval systems from basic pixel-level comparisons to advanced semantic search, applied CLIP (Contrastive Language-Image Pre-training) for generating image embeddings.
- Implemented four similarity metrics ( $\mathcal{L}_1$ ,  $\mathcal{L}_2$ , Cosine, Correlation) and integrated ChromaDB for efficient vector storage/retrieval, enabling fast and accurate image similarity search at scale.
- Tech Stack: Python, CLIP Torch, ChromaDB, NumPy, PIL.

### Maze Solver | | Team Leader & Core Developer

May 2024

- Architected and implemented multiple pathfinding algorithms (DFS, BFS, A\*, Q-Learning) with interactive visualization, enabling users to understand algorithm behavior in real-time.
- Applied SOLID principles and clean code practices to create a modular, maintainable codebase spanning 5+ core modules, reducing future development time by 30%.
- Programming Language: Python | Library: PyGame | Tools: GIMP, PyCharm.

### Tictactoe | | Team Leader & Core Developer

Dec 2023

- Developed an optimized Tic-tac-toe game engine in C++ featuring Minimax algorithm with Alpha-Beta Pruning, achieving efficient move computation and challenging AI bot.
- Established coding standards and documentation practices, utilizing Git workflow for cooperation and code integration.
- Programming Language: C++.