

HOANG CAO PHONG

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Website / Portfolio (hoangcaophong.dev)

EDUCATION

Vietnam National University, Ho Chi Minh City – University of Science

Sep 2024 – Jun 2028

- B.Sc. in IT | **Major:** Computer Science – Artificial Intelligence Track (*expected*)
- **Relevant Coursework:** AI Fundamentals, Machine Learning, NLP, Computer Vision, Data Mining, Smart Data Analytics, Scientific Method, Linear Algebra, Calculus, Big Data, Deep Learning, Speech and Video Processing.
- **Honor:** *Selected for University ICPC Team – University of Science, VNU-HCM (2024)*

Tran Hung Dao High School for the Gifted, Phan Thiet City, Binh Thuan, Vietnam

Sep 2021 – Jun 2024

- Chemistry Gifted Class
 - **Honor:** Selected as 1 of 6 outstanding 8th-grade students from Binh Thuan Province chosen for Chemistry Team in **Talent Class for 9th Graders** at *Tran Hung Dao High school for the Gifted*.
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AWARDS & CERTIFICATIONS

- Applying AI in Learning and Research - Issued by Student Culture House of Ho Chi Minh City **Apr 2025**
 - Medical Imaging - Certified by Kyoto Institute of Technology, Japan **Feb 2025**
 - Robot Programming - Certified by United States of America Consulate General – Ho Chi Minh City **Oct 2024**
 - Third Prize - Provincial Informatics Olympiad **Oct 2023**
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RESEARCH EXPERIENCE

UIT Information Security Lab (UIT - InSecLab) | AI x Security Research Intern

Mar 2026 – Ongoing

- Led a small research group on AI-assisted cybersecurity, focusing on security analysis and multimodal AI.
- Supported research workflows, including literature review, data preprocessing, model evaluation, and result analysis.
- Assisted in developing and maintaining web-based resources for the lab and CNSC Information Security Center.

Computational Linguistics Center – HCMUS | Research Assistant Intern

Jan 2026 – Ongoing

- Selected as a Research Assistant Intern at an interdisciplinary research center specializing in Linguistics, Computer Science, and Natural Language Processing (NLP), with a focus on Vietnamese-related resources.
 - Supported Vietnamese language resource development, including data preprocessing and linguistic annotation.
 - Collaborated in academic research workflows, gaining exposure to applied AI and NLP research practices.
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LEADERSHIP & ACTIVITIES

Google Student Ambassador Program | Google Student Ambassador 2026

Jan 2026 – Ongoing

- Spearheaded campus initiatives to advocate for Google's AI and developer ecosystem.
- Orchestrated technical workshops equipping students with practical insights into AI trends.
- Cultivated a dynamic tech community to accelerate cutting-edge technology adoption.

Google Developer Group on Campus – HCMUS | MC & Graphic Designer

Oct 2024 – Ongoing

- Served as MC for technical workshops and community events, introducing sessions and coordinating program flow.
- Designed visuals for events, workshops, and social media using Illustrator, Photoshop, GIMP, and Premiere.
- Collaborated with developers and organizers to align technical presentations with branding and audience engagement.

Library of University of Science – VNUHCM | Member of Technical Department

Oct 2024 – Ongoing

- Set up audiovisual systems and online streaming for library events.
- Produced videos, newsletters, and social media updates to boost student engagement.
- Conducted data analysis and research to improve library services.

Strong PC – Student Laptop Service & Optimization | Co-founder, Management Board

Sep 2025 – Ongoing

- Co-founded and led a student-run laptop support project providing maintenance and optimization services.
 - Managed operations, task assignments, and financial planning across technical and communication teams.
 - Directed internal documentation, workflow development, and collaboration planning with the University Library
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TECHNICAL PROJECTS

[WindyAI – Smart Travel Planner](#) | Project Manager & AI Engineer

Sep 2025 - Dec 2025

- Formulated **travel itinerary planning** as a **constrained optimization problem** (*time, budget, spatial, preference constraints*), and designed a **Greedy + Lookahead heuristic** with a **multi-factor POI scoring function** to generate feasible, near-optimal travel sequences under real-world constraints.

- Developed an **image-based landmark recognition module** using a **ResNet-based CNN (PyTorch)** on user-uploaded photos, and integrated visual predictions into the itinerary planning pipeline to reduce ambiguity in POI selection.
- Built an **end-to-end computer vision inference pipeline** (*preprocessing, model inference, top-K prediction with confidence scores*) and tightly coupled recognition outputs with downstream planning decisions.
- **Led a team of five** in designing an **end-to-end AI decision support system**, integrating **auxiliary AI modules** (*weather-aware adjustment, LLM-based assistant*), and exploring reinforcement learning-based planning.

Link Project: https://github.com/HoangCaoPhong/WindyAI-Smart_Travel_Planner

Vietnamese Facial Emotion Recognition | Computer Vision, Deep Learning

Dec 2025 - Ongoing

- Developed a **real-time facial emotion recognition system** using **CNNs and OpenCV**, and formulated the task as an evaluation of cross-cultural generalization in facial expression recognition.
- Analyzed **dataset bias** of **FER2013 (Western-centric)** on Vietnamese facial data, identifying performance degradation and misclassification patterns across emotion categories.
- Designed and implemented a **transfer learning and fine-tuning pipeline** with Vietnamese facial images, applying **layer freezing** and **low learning-rate optimization** to adapt pre-trained models under limited data conditions.
- Evaluated model performance using **accuracy and confusion matrices**, and analyzed **limitations related to dataset size and cultural expression variance**, highlighting challenges in emotion recognition across cultural contexts.

Link Project: <https://github.com/HoangCaoPhong/realtime-facial-emotion-recognition-vietnamese-faces>

MindMeetingAI – Intelligent Meeting Assistant | AI Engineer, NLP & LLM Systems **Sep 2025 – Dec 2025**

- Designed an **end-to-end NLP system** for meeting speech transcription, structured summarization, and semantic question answering, framing the task as an applied study of **information retrieval and generation over speech data**.
- Implemented **Vietnamese ASR** using **Whisper**, and built a **transcript normalization pipeline** to improve downstream retrieval and summarization quality.
- Designed a **Retrieval-Augmented Generation (RAG) pipeline** using **sentence embeddings** and a **vector database**, enabling context-aware semantic search over long meeting transcripts.
- Integrated **local LLM inference** for privacy-preserving analysis, and analyzed **RAG effectiveness and failure cases** in summarization and semantic Q&A over noisy ASR outputs.

Keywords: *Speech-to-Text · RAG · LLM Systems · Semantic Search · Sentence Transformers · Vector Databases*

Link Project: <https://github.com/HoangCaoPhong/MindMeetingAI>

RTSP/RTP-Based Real-Time Video Streaming Server | Networked Computing

Sep 2025 – Dec 2025

- Designed and implemented a **client-server real-time video streaming system**, using **RTSP (over TCP)** for session control and **RTP (over UDP)** for low-latency media delivery.
- Implemented the **RTSP state machine** with full support for **SETUP, PLAY, PAUSE, and TEARDOWN**, and developed **bit-level RTP packetization** by manually encoding **12-byte RTP headers** in compliance with **RFC 3550**.
- Implemented **MJPEG frame fragmentation** under **UDP MTU constraints**, and designed a **client-side buffering mechanism** to mitigate network jitter during high-resolution streaming.
- Analyzed **trade-offs between latency, buffering, and playback stability**, highlighting system-level challenges in real-time streaming over unreliable networks.

Keywords: *RTSP · RTP · Network Protocols · Client-Server Architecture · Bit-Level Packet Encoding*

Link Project: https://github.com/HoangCaoPhong/Video_Streaming_Server

MAYBAO, E-commerce clothing website | Team Lead , Web Developer

Sep 2024 – Dec 2024

- Led a team of four, managed tasks using Scrum methodology & Notion, earning a perfect score for all members.
- Developed an e-commerce clothing website using WordPress & WooCommerce with a responsive design, implemented user authentication, product catalog, shopping cart, and QR code payment.
- Enhanced security with SSL encryption & Sucuri Security, integrated invisible watermark for content protection.

Demo Video: <https://youtu.be/zwHWVFt-Kc8>

Link Project: https://github.com/HoangCaoPhong/MAYBAO_E-commerce-clothing-website

SKILLS

Programming Languages: Python, C/C++, LaTeX, MATLAB, C#, HTML, JavaScript, CSS.

ML/DL: PyTorch, CNNs, Transformers, Transfer Learning, Model Evaluation & Analysis.

CV/NLP: OpenCV, FER, ASR, Embeddings, RAG

Frameworks/Tools: Git/Github, Overleaf, Unity, Notion, Google Workspace, Microsoft Office, WordPress.

Soft Skills: Leadership, Teamwork, Problem Solving, Communication, Time Management, Self-directed learning

Languages: English (fluent), Vietnamese (native speaker), Chinese (beginner).