HOANG CAO PHONG

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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***)**   GPA: 3.55/4
- **Relevant Coursework:** Interpersonal Skills, Fundamental of Programming, Object-Oriented Programming, Data Structures & Algorithms, AI Fundamentals, Machine Learning, NLP, Computer Vision, Data Mining, Smart Data Analytics, Operating Systems, Scientific Method, Discrete Math, Linear Algebra, Calculus, General Physics, Big Data, Parallel Programming, Deep Learning, Speech and Video Processing, Career Orientation.
- ***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   GPA: 9.2/10
- ***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.*

SKILLS

Programming Languages: C/C++, Python, HTML, JavaScript, CSS, LaTeX, MATLAB.
ML/DL: PyTorch, CNNs, 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).

EXPERIENCES & ACTIVITIES

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.

Chemistry Student Alliance, Tran Hung Dao High school for the Gifted | Head of Organization   **May 2023 – Jun 2024**
- Managed logistics, scheduling, and resources for club activities.
- Organized chemistry competitions, workshops, and science fairs for students.
- Coordinated with teachers and guest speakers for STEM seminars and experiments.

Basketball Club, Tran Hung Dao High school for the Gifted | Member   **May 2022 – Oct 2023**
- Took part in team practices, training, and inter-school competitions.
- Helped organize training drills, team-building events, and recruitment.
- Promoted sports participation and an active lifestyle among students.

RESEARCH INTERESTS

- **Computer Vision**, focusing on facial analysis and representation learning in real-world, culturally diverse settings.
- **Deep Learning** on underrepresented and Vietnamese-centric datasets, emphasizing data efficiency and generalization.
- **Multimodal AI systems** (Vision–Language, Speech–Text) for information fusion and human-centered applications.
- **Applied optimization and heuristic methods** for AI-driven decision-making, planning, and resource allocation.
- **Robustness, bias, and ethical considerations** in real-world AI systems and their societal and economic impact.

TECHNICAL PROJECTS

[WindyAI – Smart Travel Planner](#) | Project Manager & AI Engineer   **Sep 2025 - Dec 2025**
- Led a team of five, managed tasks using Scrum methodology & Notion, earning a perfect score for all members.
- **Formulated travel itinerary generation as a constrained optimization problem** (time, budget, spatial and preference constraints), **designed a Greedy + Lookahead heuristic**, and **developed a multi-factor POI scoring function** to construct feasible, near-optimal POI sequences under real-world constraints.
- **Implemented an image-based landmark recognition module** using a ResNet-based CNN (PyTorch) to map user-uploaded images to candidate POIs, and integrated visual predictions into the itinerary planning workflow.
- Built a **complete computer vision inference pipeline** (preprocessing, model inference, top-K prediction with confidence scores) and tightly coupled recognition outputs with the planning workflow.
- Developed an **end-to-end AI decision support system**, incorporating auxiliary AI services (route estimation, weather-aware adjustment, LLM-powered chatbot) as non-core modules, and **analyzed heuristic limitations with potential extensions toward reinforcement learning–based planning**.

Keywords: *Constrained Optimization · Computer Vision · Deep Learning · PyTorch · AI Systems · Decision Support*
Demo Video: https://youtube.com/watch?v=LPOv2afp0iU

[Vietnamese Facial Emotion Recognition](#) | Computer Vision, Deep Learning   **Dec 2025 - Ongoing**
- Developed a **real-time facial emotion recognition system** using **CNN** and **OpenCV**
- Analyzed **dataset bias** of **FER2013** (Western-centric, 2013) on **Vietnamese faces**
- Designed and implemented a **fine-tuning pipeline** with **Vietnamese facial data**
- Applied **transfer learning** with **layer freezing** and **low learning rate optimization**
- Identified **limitations** related to **dataset size** and **cultural expression variance**
- Evaluated performance using **accuracy** and **confusion matrix**

[MindMeetingAI – Intelligent Meeting Assistant](#) | AI Engineer, NLP & LLM Systems   **Sep 2025 – Dec 2025**
- Designed an AI system for **meeting speech transcription, structured summarization, and semantic Q&A.**
- Implemented Vietnamese ASR using **Whisper** and built a transcript normalization pipeline.
- Designed a **Retrieval-Augmented Generation** pipeline with sentence embeddings and a vector database (ChromaDB).
- Integrated **local LLM inference (LLaMA3 via Ollama)** for privacy-preserving analysis and framed the system as an applied study of **RAG effectiveness**.

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

[RTSP/RTP-Based Real-Time Video Streaming Server](#) | *Computer Networks & Systems Project*   **Sep 2025 – Dec 2025**
- Designed and implemented a client–server video streaming system using RTSP (over TCP) for session control and RTP (over UDP) for real-time media delivery
- Implemented the RTSP state machine with full support for SETUP, PLAY, PAUSE, and TEARDOWN commands
- Developed RTP packetization at the bit level, manually encoding 12-byte RTP headers in compliance with RFC 3550
- Implemented MJPEG frame fragmentation to support HD video streaming under UDP MTU constraints
- Designed a client-side frame buffering mechanism to reduce network jitter and ensure smooth playback
- Analyzed trade-offs between latency, buffering, and playback stability in real-time streaming systems

Keywords:
        RTSP · RTP · Real-Time Systems · Network Protocols · Client–Server Architecture · Bit-Level Packet Encoding

[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*

Poker Simulator Game | Team Lead, Game Developer   **Oct 2024 – Nov 2024**
- Led a team of three to develop a C++ Poker Simulator game, earning 100% scores for all members.
- Designed and implemented PvP, PvE, Single Card Duel, and Three Card Poker modes; engineered core mechanics including card shuffling, hand ranking, AI-driven opponents, and modular game logic.
- Applied SCRUM, overseeing development via GitHub, Google Sheets, Notion, and weekly meetings.

Reverse Engineering – Cracking Project | Team Leader, System Analyst   **Aug 2025 – Sep 2025**
- Led a 2-member team to earn a perfect score in the Computer Systems project focused on software reverse engineering.
- Disassembled .exe CrackMe binaries using OllyDbg, IDA Pro to analyze and reconstruct serial validation algorithms.
- Developed C++ keygen tools and authored technical documentation on x86 disassembly and debugging workflows.

AWARDS & CERTIFICATIONS
- Applying AI in Learning and Research - Issued by Student Culture House of Ho Chi Minh City   **Apr 2025**
- Python Fundamentals - Certified by CodeLearn.io   **Mar 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**
- Advanced C++ - Certified by CodeLearn.io   **Dec 2023**
- **Third Prize - Provincial Informatics Olympiad**   **Oct 2023**