# Hao Phung

hao-pt.github.io | tienhaophung@gmail.com | hao-pt | Google Scholar

## Education

- **Vietnam National University Ho Chi Minh City - University of Science** Viet Nam
  *Bachelor of Computer Science; GPA:* 8.40/10 *(in-major GPA:* 9.05/10*); Rank:* 14/320 *Aug 2016 – Nov 2020*
  - Coursework: Computer Vision, Machine Learning, Artificial Intelligence, Multivariate Statistical Analysis, Data structures & Algorithms.

  **Honors thesis**: Human action monitoring based on Visual question answering *Aug 2019 - Aug 2020*
  *Supervisor: Dr. Quoc-Ngoc Ly; Grade:* 10/10
  - Utilized human-prior knowledge formed as Task Ontology to instruct the system what visual tasks should be performed to produce a suitable answer for an input query under Surveillance context.

## Publications

*(*) denotes equal contribution*

- Quan Dao*, **Hao Phung***, Binh Nguyen, Anh Tran. "Flow Matching in Latent Space". Under review. 2023.
- Thanh Van Le*, **Hao Phung***, Thuan Hoang Nguyen*, Quan Dao*, Ngoc Tran, Anh Tran. "Anti-DreamBooth: Protecting users from personalized text-to-image synthesis". Proceedings of the IEEE/CVF International Conference on Computer Vision. 2023.
- **Hao Phung***, Quan Dao*, and Anh Tran. "Wavelet Diffusion Models are fast and scalable Image Generators". Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition. 2023.
- H. Vo*, **T.H. Phung***, and N. Ly. "VQASTO: Visual Question Answering System for Action Surveillance based on Task Ontology". 2020 7th NAFOSTED Conference on Information and Computer Science (NICS'20).

## Experience

- **VinAI Research** Ha Noi, Viet Nam
  *AI Research Resident* *Aug 2021 - now*
  - Project: "Flow Matching in Latent Space"
    - Introduce a latent flow matching framework that targets high-resolution image synthesis and various types of conditional image synthesis.
  - Project: "Anti-DreamBooth: Protecting Users from Personalized Text-to-Image Synthesis"
    - Introduce perturbation learning algorithms for enhanced user protection against malicious risks in personalized text-to-image synthesis.
  - Project: "Wavelet Diffusion Models are fast and scalable Image Generators"
    - Propose a wavelet-based diffusion scheme that accelerates image generation by leveraging low- and high-frequency components of wavelet subbands at the image and feature levels.
    - Achieve near real-time performance, effectively narrowing the speed gap with GAN counterparts.

  *Applied Rotation Program* *Jul 2022 - Oct 2022*
  - Present a pipeline for Object Search using Open Vocabulary Object Detection that enables the retrieval of similar outputs based on a query object.

  *AI Engineering* *Dec 2020 - Aug 2021*
  - Investigated SOTA semi-supervised learning for Image Classification and Monocular 3D Object Detection.
  - Validated and benchmarked AI models for Autopilot projects (e.g. Camera Degradation, Lane detection).

- **Skeleton-Based Abnormal Behavior Recognition** Ho Chi Minh, Viet Nam
  *Research Collaborator - Project coordinator: Dr. Quoc-Ngoc Ly (cooperated with SNA Global)* *Sep 2019 - Mar 2020*
  - Developed a real-time anomaly action recognition system by enhancing time efficiency for pose tracking and transforming skeleton sequence to image as new spatio-temporal feature for action recognition.
  - Improved accuracy of action recognition model by leveraging EfficientNet models and built up a minimal website using Flask framework for demonstration.
  - **Leveraged knowledge**: PyTorch, Keras, Flask, Python, OpenCV, Git.
- **KMS Technology** Ho Chi Minh, Viet Nam
  *AI Engineer Intern* *Aug 2019 - Nov 2019*
  - Created new dataset (nearly 3000 images) by collecting and refining images manually for Image matching problem. Also, utilized Image Hashing algorithm for filtering out similar samples.
  - Increased accuracy by 2.5% (at 96.5%) through fine-tuning state-of-the-art ImageNet models and adding new augmentation methods on the new dataset.
  - **Leveraged knowledge**: Tensorflow, OpenCV, Git.

## Open-source Projects

- **Automatic License Plate Recognition (ALPR)** Apr 2019 - Jun 2019
  - Redesigned a handcraft algorithm for ALPR by adding FloodFill algorithm to extract plate more precisely and post-processing character image in plate to increase the accuracy of plate number recognition.
  - Extended ALPR for motorbike plate recognition by utilizing Haar-Cascade Classifier to detect the plate.
  - **Tech stack**: Python, OpenCV, Haar Cascade Classifier, SVM, Tesseract-OCR, Git.
- **Face Recognition** May 2019 - Jun 2019
  - Built a model for face recognition through utilizing cutting-edge face detection methods (e.g. SSD, Multitask-CNN) and optimizing the SVM model for identity recognition on our dataset.
  - Adopted FaceNet for feature extraction as input to SVM model.
  - **Tech stack**: Python, OpenCV, SSD, FaceNet, SVM, Facial landmarks, Git.

## Honours and Awards

- Outstanding thesis award 2020
- Top 5 IT students in academic year 2018 - 2019

## Programming Skills

- **Languages**: Python, C/C++, SQL, HTML/CSS.
- **Technologies**: PyTorch, Tensorflow, OpenCV, Scikit-learn, Git, LaTeX, Docker, Linux.

## Extracurricular Activities

- **AI Day 2022** Hanoi, Vietnam
  *Panel speaker* *Aug 2022*