Tien-Hao Phung

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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, Soft Computing, 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

- **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*
  - Study efficient-sampling approaches for diffusion models
  - Study SOTA self-supervised learning for Pretraining Vision Transformer through contrastive learning framework and masked image modeling.

  AI Engineering Resident *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.

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, NLTK, Git, LaTeX, Linux.