QUANG-HUY NGUYEN

Vietnam

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Research Interest

My research interests are Few-shot Learning, Attention mechanism, and Optimization on Deep Learning model for Computer Vision tasks, including image classification, object detection/segmentation, object counting, and object tracking.

Education

- **Computer Engineering, University of Information Technology, VNU-HCM** Ho Chi Minh City, Vietnam
  Bachelor of Engineering - CGPA: 7.84/10 (∼ 3.13/4.0) *August, 2015 - May, 2020*
  - ***Graduate thesis:*** Detection and classification on sensitive images and videos using deep learning neural network
  - ***Thesis score:*** 9.8/10
  - ***Academic advisor:*** Assoc. Prof. Duc-Lung Vu

Research Experiences

- **VinUni-Illinois Smart Health Center, VinUniversity** Ha Noi, Vietnam
  Research Assistant *Jan, 2022 - June, 2022*
  - **Description:** Proposing a Yoga poses recognizing and scoring framework with limited data. Proposing and developing a few-shot image classification algorithm named FSTF (FewShot-TransFormer). Developing a new attention mechanism based on cosine similarity that outperforms the scaled dot-product attention in various scenarios across datasets.
  - **Advisors:** Assist. Prof. Duy-Dung Le, Dr. Hieu Pham, Prof. Minh Do

- **University of Information Technology, VNU-HCM** Ho Chi Minh City, Vietnam
  Research Assistant *July, 2019 - Dec, 2021*
  - **Description:** Working with Mask R-CNN for object detection/instance segmentation tasks. Developing a two-step training protocol for boosting Mask R-CNN performances. Developing a semi-automatic annotating method for large-scale labeling with a finer, more detailed segmentation mask at a significantly lower cost. Building a large-scale visual dataset for object detection/visual classification tasks and designing evaluation scenarios for the dataset. Developing a video classification algorithm using an inter-intra representation that outperformed previous methods.
  - **Advisor:** Assoc. Prof. Duc-Lung Vu

Publications and Manuscripts

- **Quang-Huy Nguyen**, Duy-Dung Le, Huy-Hieu Pham, Minh N. Do. *"Cosine Transformer for Transductive Few-Shot Image Classification"*, Manuscript under preparation.
- Dinh-Duy Phan, **Quang-Huy Nguyen**, Thanh-Thien Nguyen, Hoang-Loc Tran, and Duc-Lung Vu. *"Joint inter- intra representation learning for pornographic video classification"*, Indonesian Journal of Electrical Engineering and Computer Science, 2022.
- Dinh-Duy Phan, Thanh-Thien Nguyen, **Quang-Huy Nguyen**, Hoang-Loc Tran, Khac-Ngoc-Khoi Nguyen, and Duc-Lung Vu. *"LSPD: A Large-Scale Pornographic Dataset for Detection and Classification"*, International Journal of Intelligent Engineering and Systems, 2022.
- Dinh-Duy Phan, Thanh-Thien Nguyen, **Quang-Huy Nguyen**, Hoang-Loc Tran, Khac-Ngoc-Khoi Nguyen, and Duc-Lung Vu. *"A Novel Pornographic Visual Content Classifier based on Sensitive Object Detection"*, International Journal of Advanced Computer Science and Applications, 2021.
- Hoang-Loc Tran, **Quang-Huy Nguyen**, Dinh-Duy Phan, Thanh-Thien Nguyen, Khac-Ngoc-Khoi Nguyen, and Duc-Lung Vu. *"Additional learning on object detection: A novel approach in pornography classification"*, Proceedings of the FDSE 2020: Future Data and Security Engineering. Big Data, Security and Privacy, Smart City and Industry 4.0 Applications, 2020.

- **Quang-Huy Nguyen**, Khac-Ngoc-Khoi Nguyen, Hoang-Loc Tran, Thanh-Thien Nguyen, Dinh-Duy Phan, and Duc-Lung Vu. *"Multi-level detector for pornographic content using CNN models"*, Proceedings of the 2020 RIVF international conference on computing and communication technologies (RIVF), 2020.

Feature Projects

- **Few-shot Cosine-Transformer** Jan, 2022 - July, 2022
  GitHub Repository
  - **Description:** Few-shot Image Classification with Transformer Attention and Cosine Similarity. Achieve a competitive performances on *mini*-ImageNet, CUB, and CIFAR-FS datasets.

- **Few-shot Learning** Feb, 2022 - May, 2022
  GitHub Repository
  - **Description:** Summary the basic concepts and baseline algorithms of Few-shot Learning. Reviewing and summarizing Few-shot Learning methods and algorithms on Computer Vision tasks.

- **Transformers4Vision** Oct - Dec, 2021
  GitHub Repository
  - **Description:** Review and summarize Transformer-based method and Attention mechanism on Computer Vision tasks, including image classification, object detection and segmentation.

Relevant Courses

- **Deep Learning Specialization** August 20th, 2021
  Prof. Andrew Ng *DeepLearning.AI, Coursera*

- **Writing in the Sciences** July 29th, 2021
  Prof. Kristin Sainani; Certificate with ***honor*** *Stanford University, Coursera*

- **Machine Learning** June 18th, 2021
  Prof. Andrew Ng *Stanford University, Coursera*

Honors and Awards

- **UIT Office of Excellent Programs Scholarship – Full Scholarship** Fall 2019
  Office of Excellent Programs – UIT ***(For highest GPA student over academic year class in the faculty)***

- **UIT Encouraging Scholarship** Fall 2018/2019
  Office of Student Affairs – University of Information Technology

Technical Skills

- **Programming languages**: C++, Python
- **Deep Learning frameworks and tools**: PyTorch, TensorFlow, OpenCV, Numpy, Pandas, WandB
- **Other**: Bash Shell, VIM, LaTeX

References

1. **Prof. Minh Do** (Sc.D.), Department of Electrical and Computer Engineering – University of Illinois at Urbana-Champaign; Honorary Vice Provost – VinUniversity. *minhdo@illinois.edu*
2. **Assoc. Prof. Duc-Lung Vu** (Ph.D.), Chairman of the school's council, Faculty of Computer Engineering, University of Information Technology, Vietnam National University Ho Chi Minh City. *lungvd@uit.edu.vn*
3. **Assist. Prof. Duy-Dung Le** (Ph.D.), College of Engineering and Computer Science, VinUniversity. *dung.ld@vinuni.edu.vn*