Vu LeDuc (Vu)

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SUMMARY

I can work independently with minial supervision and training thanks to the research, self-taught skills gained through years of training. I have a demonstrated history of working in deep learning, infrastructure automation, Linux servers, and computer architecture. Interested in devising a better problem-solving method for challenging tasks, and learning new technologies, tools, and knowledge quickly if the need arises.

EDUCATION

Vietnam National University, Hanoi (VNU).

Bachelor of Mechatronics and Automation *August 2018 - June 2022*

- Cumulative GPA: 3.43/4.0 (**Top 2 %** in the faculty)
- Final project: "Low Illumination Image Enhancement for Night-Time Pedestrian Detection on YOLOv3".
- Relevant projects: Apple defect detection with YOLOv3, Face mask detection, Triplet Attention for increasing performance.

SKILLS

Technical Skills

- **Programming** - Python, Bash (proficient), Scala, Java, MATLAB (intermediate), C++.
- **Specialized skills** - Deep Learning, Computer Vision, GAN, Computer Architecture, processor architecture.
- **Frameworks** - PyTorch, Slurm, HPC, numpy, pandas, OpenCV (proficient), TensorRT, Container.
- **Tools & Technology** - Linux servers, LaTex, Git, Emacs Lisp (proficient), Networking.

General Skills

- **Languages** - Vietnamese (native), English (IELTS 7.5)

EXPERIENCE

ISODS George Washington Institute of DS & AI Massachusetts, United States

Intern (remote) *July 2023 - present*

- Will be updated soon

Phenikaa University Hanoi, Vietnam

Research Associate *July 2022 - August 2023*

- Developing AI models for landmark detection from radar signals following the teacher-student style, achieving 3 % error on pixel level compared to image-based models.
- Writing concurrent and distributed programs for radar data pre-processing across multiple HPC nodes, resulting in significantly lesser processing time.
- Implementing various attention mechanisms such as CBAM, Triplet Attention on ResNet50 for image recognition on ImageNet, achieving 2% and 3% boots in accuracy compared to the baseline. Also studying the impact of some state-of-the-art attention mechanisms on CNN architectures, Vision Transformers such as MobileViT (Apple) on low scale and low resolution images.
- Quantizing, optimizing and deploying vision models on Jetson Nano, achieved low latency, high fps, minor accuracy drop.
- Processing data from different sensors files for future ballast and de-ballast anomaly detection on cruises, joint project between TechGross company (South Korea) and Phenikaa.

Information Technology Institute (ITI-VNU) Hanoi, Vietnam

Research Intern *August 2020 - May 2022*

- LSI Design Contest

  - Designing a custom ASIP under RISC-V for a Deep Q-Network accelerator and implemented a multi-cycle micro-architecture of this ASIP with Chisel HDL and Scala on FPGA.
  - Documenting a report of this work and submitted to the LSI Design Contest in Japan as a single player and was awarded the Fighting Spirit Prize at the conference.
- SISLAB - Toshiba-Japan joint project on "CNN Accelerator for handwritten digits recognition".
  - Designing, implementing a camera interface and a copy version of the I2C protocol and integrating them on Chipyard platform (an agile RISC-V SoC) to configure working modes for the camera and acquire videos, images for a CNN accelerator through an embedded software via a RISC-V core and run on FPGA.
- Implementing Q-learning algorithm with Chisel HDL on FPGA.
- Studying about digital design, computer architecture with RTL design and computer organization.

Vietnam National University (VNU) Hanoi, Vietnam

Undergraduate Student Researcher *Jan 2020 - July 2020*

- Conducting research on vision-based crack detection algorithms and performance metrics.
- Examining and analyzing the behaviors and capabilities of a novel parameter, proposed by our group, in performance measurement of crack detection algorithms with a large amount of reputable experimental data. The metrics doesn't require ground-truth, making it faster for evaluating results.

SELECTED ACHIEVEMENTS

International

- Finalist, Most Creative Prize (second place) at the IEEE SEACAS Hackathon 2022, NTU, Singapore
- Finalist, Fighting Spirit Prize at the 25th LSI Design Contest in Okinawa 2022, Kyutech, Japan
- Exchange student in the Sakura Science Program 2021, UEC, Tokyo, Japan
- Exchange student in the TF Scale 2021, Singapore
- Incentive Prize at the TF Scale Programme 2021, Singapore

Domestic

- Outstanding Youth Face award of UET-VNU 2020, UET-VNU
- Third prize in the 2020 Student-level Scientific Research Conference 2020, UET-VNU
- Merit – based scholarships for top 5% excellent academic students 2020, UET-VNU

RELEVANT COURSEWORKS

University	MATLAB, Micro-controllers, Digital Techniques, C++ programming, Algebra, Calculus.
Open Courses	Computer Organization, Digital Design and Computer Architectures (ETH Zurich), Object Oriented Programming
Coursera	Machine Learning and Deep Learning Specialization on Coursera, Data Structure and Algorithms (Princeton), Generative Adversarial Networks (GANs), Software Architecture.

PUBLICATIONS

[1]. Minhhuy Le, **Duc Vu Le**, Tien Dat Le, and Jinyi Lee. Ultrasonic testing of rivet in multilayer structure using convolutional neural network on edge device. Science Progress, 106(2):00368504231177551, 2023.

[2]. Minhhuy Le, **Duc Vu Le**, Vu Thi Hong Ha. Thermal Inspection of Solar Photovoltaics Modules with Deep Convolutional Neural Network on Edge Device of AUV. Measurement (2023): 113135 (**IF=5.131**)

[3]. **Duc Vu Le**, Tuan Trinh The, Minhhuy Le, and Jinyi Lee. Hand-pose estimation from mmWave radar signals. Measurement (Oct 2023 expected)

[4]. Phan, Hai, Cindy Le, Yihui He, **Vu Le**, and Anh Nguyen. Faster and Interpretable Face Recognition for Out-Of-Distribution Data Using Vision Transformers (ViTs). In Proceedings of the IEEE/CVF winter conference on applications of computer vision (under review).