Viet-Dung Nguyen

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Summary

A master student in Mathematics and Informatics major is currently attending Hanoi University of Science and Technology. Aiming to leverage proven analytical, critical thinking, and research skills to successfully become an outstanding artificial intelligence researcher. Frequently praised as hard-working by my peers. Currently, I am focusing on computer vision, but I am eager to expand my research horizon to other areas of AI and mathematics, such as generative models and optimization algorithms. Looking for a PhD scholarship in Mathematics for AI.

Education

2019 - 2023 Bachelor Degree at **Faculty of Mathematics and Informatics - Hanoi** (GPA: 3.66/4.0) **University of Science and Technology**

2023 - 2025 Master of Science Degree at **Faculty of Mathematics and Informatics** (GPA: –/4.0 - –) **- Hanoi University of Science and Technology**

Work Experience

ViettelAI
AI Engineer 7/2023 - Present

Responsible for researching and applying AI to solve customer's problems. Conducting research about foundation models and Mixture of Experts.

Viettel High Tech
Viettel Digital Talent Resident 2023 4/2023 - 7/2023

Responsible for researching and applying AI to improve human health and conduct high-impact research on biomedical sensing, informatics, and their applications in smart healthcare.

PIXTA Vietnam
AI Researcher Internship 11/2022 - 2/2023

Responsible for researching and applying technology to help improve and support users in many different tasks.

Image Processing and Signal Analysis Laboratory
Research Assistant 11/2021 - 11/2023

Taking part in research in fields such as Medical Image Segmentation (on cardiac MRI, skin lesion, cell, brain tumor, 3D infant brain images,...); Medical Image Classification; Object Detection; Object Localization;...

Projects

Interactive Image Segmentation Link to repository

A project at Pixta Vietnam. We developed a tool that can semi-automatically segment objects in an input image to fasten the labeling process for images. Work done:

- **Computer Vision**: Using Image Processing techniques, Deep Learning models to interactively segment objects in an image.
- **Tool interface**: Using OpenCV library for user interface design.

Drowsiness Detection Link to repository

A project at Viettel High Tech. We proposed a deep learning model that automatically detects the drowsiness of drivers through a camera pointing at their faces. The model reached 95% accuracy on a public dataset with real-time processing.

Conversion between MRI and CT images Link to repository

A project at Viettel High Tech. We proposed adopting conditional Denoising Diffusion Probabilistic Models to perform the conversion between MRI and CT images, two of the most used modalities in medical image analysis. The model reached PSNR score of 10.2635 on a public dataset on Kaggle and took 6 minutes to sample an image.

Human Pose Correction for Physical Exercises (Graduation thesis) Link to repository

A project at Image Processing and Signal Analysis Laboratory. We proposed a weakly-supervised learning framework that can learn to correct human action only based on the probability of that action falling into the corresponding class rather than requiring the corresponding label for the pose. The model successfully corrected poses for Gym exercises with image input. A model for video modality is under research.

Offline Signatures Verification Link to repository

A project at Vietel High Tech. We proposed using Feature-based Knowledge Distillation and a Transformer-based model for classifying if two given signatures are of the same person. Our method reached 91% accuracy on the CEDAR dataset and 85% on our private dataset.

Publications

Nguyen, Viet-Dung et al. (2022). "U-shape-based architecture with Adjusted Bilateral Guided Aggregation Layer for nuclei image segmentation". In: *2022 IEEE Ninth International Conference on Communications and Electronics (ICCE)*, pp. 363–368. DOI: 10.1109/ICCE55644.2022.9852083.

Nham, Do-Hai-Ninh, Viet-Dung Nguyen, et al. (2022). "A New LCFCN-based Approach for Weakly-Supervised Fish Segmentation". In: *2022 9th NAFOSTED Conference on Information and Computer Science (NICS)*, pp. 258–263. DOI: 10.1109/NICS56915.2022.10013406.

Nham, Do-Hai-Ninh, Minh-Nhat Trinh, et al. (2023). "An EffcientNet-encoder U-Net Joint Residual Refinement Module with Tversky–Kahneman Baroni–Urbani–Buser loss for biomedical image Segmentation". In: *Biomedical Signal Processing and Control* 83, p. 104631. ISSN: 1746-8094. DOI: https://doi.org/10.1016/j.bspc.2023.104631.

Thang, Tran Ngoc et al. (2023). *A neurodynamic approach for a class of pseudoconvex semivectorial bilevel optimization problems (accepted at Optimization Methods and Software)*. arXiv: 2304.10898 [math.OC].

Tuan, Tran Anh et al. (2024). *A Hyper-Transformer model for Controllable Pareto Front Learning with Split Feasibility Constraints (accepted at Neural Networks)*. arXiv: 2402.05955 [cs.LG].

Nguyen, Viet Dung et al. (2025). "CAMEx: Curvature-aware Merging of Experts". In: *The Thirteenth International Conference on Learning Representations*. URL: https://openreview.net/forum?id=nT2u0M0nf8.

Skills

Programming Language	**Experienced:** Python **Familiar:** C++ , Matlab , Latex
Frameworks & Tools	Windows , Linux, Jupyter, VSCode, Git
Libraries	Matplotlib, Numpy , Pytorch , OpenCV , Tensorflow
Languages	**Native:** Viet Nam **Fluent:** English (TOEIC 765)

Honors & Awards

2020 - 2022 **A-class Study Encouragement Scholarship**
Issued by Hanoi University of Science and Technology

2022 **Third Prize Scientific Research Student Award**
Issued by School of Applied Mathematics and Infomatics
Project: "A New LCFCN-based Approach for Weakly-Supervised Fish Segmentation".

2022 **Selected to Participate The Pre-PhD Summer School 2022**
Held by Vin-BigData Institute and Vin-University of VinGroup.

Certificates

Neural Networks and Deep Learning 2/2022
Coursera Link to Certificate

Structuring Machine Learning Projects 3/2022
Coursera Link to Certificate

Improving Deep Neural Networks: Hyperparameter-Tuning, Regularization and Optimization 3/2022
Coursera Link to Certificate

Convolutional Neural Networks 8/2022
Coursera Link to Certificate

References

Linh Duy Tran

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