

SON THAI LY

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EDUCATION

University of Houston

Ph.D. of Computer Engineering
Advisor: Professor Hien V. Nguyen

TX, USA
Jan. 2021 - Present

Chonnam National University

Master of Computer Science

South Korea
Sep. 2017 - Aug. 2019

SaiGon Technology University

Bachelor of Mechatronics

Vietnam
Sep. 2009 - Aug. 2013

WORK EXPERIENCE

University of Houston

Research Assistant

TX, USA
June 2021 - Present

- Conducted research on parameter-efficient fine-tuning (PEFT) methods to enhance fairness in medical applications.
- Led National Institutes of Health project on solving *limited and noisy annotations problems* in the medical imaging domain.
- Published 5 papers, including 1 journal accepted, 1 submitted to CVPR25, and 3 ArXiv papers.

Chonnam National University

Research Assistant

South Korea
Sep. 2017 - Aug. 2019

- Conducted research on using body gestures and 3D reconstructed facial data for *Expression Recognition*.
- Published 3 international conference papers and 1 paper on [Image and Vision Computing Journal](#).

PH.D PROJECTS (JUNE 2021 - PRESENT) | SEE [GOOGLE SCHOLAR](#)

Enhancing Parameter-Efficient Fine-Tuning of Vision Transformers through Frequency-Based Adaptation, 1st author, [Pytorch code](#), submitted to CVPR2025, [ArXiv](#).

- Exploring the approach of tuning data to fit the frozen foundation model's input distribution in conjunction with parameter-efficient fine-tuning (PEFT) methods, such as BitFit, VPT, Adapter, LoRA, Boft, etc.
- Introduce FreqFiT, a novel FFT-based method that can modify the spectrum of the features and can be easily incorporated into other fine-tuning methods.
- Providing comprehensive experimental results and analysis with many state-of-the-art PEFT methods that demonstrate the effectiveness of the above approach even with simple data tuning techniques, such as scale-shift or frequency filtering.

μ -Tuning - Optimizing Your Foundation Model for Medical Images: A Comprehensive Analysis of Fine-Tuning Strategies, 1st author, [Pytorch code](#), submitted to [Medical Image Analysis](#).

- Introducing μ -Tuning, a novel hybrid tuning framework that exhibits enhanced stability and performance compared to existing transfer learning methods on 2D and 3D datasets.
- Benchmarking the performance of visual prompt and minimal weight tuning methods on few-shots medical tasks.
- Providing extensive investigation not only on the classification results in AUC and ACC metrics, and McNemar statistics test but also on the insight into linear and non-linear tuning in medical transfer learning, stability analysis, and performances on cross-domain tasks.

Multiplexed Immunofluorescence Brain Image Analysis Using Self-Supervised Dual-Loss Adaptive Masked Autoencoder, 1st author, [ArXiv](#), [Pytorch code](#), [Artificial Intelligence in Medicine](#).

- Introducing DAMA, a novel information-theoretic self-supervised learning method that proposed objective function maximizes the mutual information between the input image and self-supervised labels for multiplexed brain image analysis.
- Introducing the first adaptive mask sampling strategy for self-supervised learning models.
- Extensive experiments on cell detection and classification are provided to validate the effectiveness of DAMA.

SKILLS

- Machine Learning, Computer Vision, Deep Learning | Probability and optimization
- Python | Pytorch, TensorFlow, Keras | OpenCV, Pandas, Sklearn, SciPy, Matplotlib