THONG TIEN DOAN

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EDUCATION

Ho Chi Minh City University of Technology - Vietnam National University (VNUHCM) 2019 - 2023
B.Sc., Major in Control and Automation Engineering, GPA: 3.5/4.0 (Top 5% of 700 students in faculty)
Thesis: Real-time Image Super-Resolution with Deep Learning Approach - 9.6/10 (top 1%) (pdf). Supervised by Dr. Giap Hoang Nguyen

RESEARCH INTERESTS

Mixture of Experts (MoE), Large Language Model (LLM).

EXPERIENCE

FPT Software AI Center (https://fpt-aicenter.com/) June 2024 - Present
AI Research Resident (AI Residency program)

Academic advisors: Dr. Quang Pham

Research topics: Mixture of Experts (MoE), Large Language Model (LLM)

LIBMoE: A Library for comprehensive benchmarking Mixture of Experts in Large Language Models

- Proposed LibMoE, a modular framework for Mixture-of-Experts in large language models, enabling efficient training and comprehensive benchmarking across 11 zero-shot tasks.
- Conducting comprehensive experiments using various MoE algorithms to evaluate the effectiveness of our framework

Enhance Generalization and Specialization in Mixture-of-Experts (Ongoing)

- The gate's routing mechanism in MoE leads to a narrow vision problem (individual MoE experts fail to utilize more samples for learning the allocated sub-task), which reduces the generalization capacity of the model.
- Proposed novel methods utilize the shared expert mechanism to address these limitations.

VNPAY (https://vnpay.vn/) August 2023 - June 2024
Data Scientist

Developed ML models that re-engaged 50,000 customers and identified 10,000+ new ones, achieving a 48% conversion rate in Vietnam's taxi ecosystem.

Built an automated customer segmentation system using big data tools, enabling precise marketing targeting.

VAS Laboratory - Ho Chi Minh City University of Technology December 2023 - December 2024
Research Student

Advisors: Dr. Giap Hoang Nguyen.

Research topics: Real-time Image Super-Resolution.

DyConvSR: Lightweight Image Super-Resolution with Dynamic Convolution (thesis) [project page]

- Designed DyConvSR, a lightweight super-resolution network with 10x fewer parameters, leveraging dynamic convolutions for competitive performance.
- Optimized network with high-frequency blocks and spatial attention for efficient edge device applications.

Emage Development (https://emagegroup.com/) April 2022 - December 2024
AI Engineer

Product Defect Detection: Improved product defect detection using YOLO (v6-v8) with domain adaptation, re-labeling, and error analysis for enhanced performance.

Template Matching for Electronic Circuit Boards: Developed a novel, efficient method for template matching, surpassing SOTA models with 98% accuracy on electronic circuit board datasets.

PREPRINTS

LIBMoE: A Library for comprehensive benchmarking Mixture of Experts in Large Language Models
Nam V. Nguyen, **Thong T. Doan**, Luong Tran, Van Nguyen, Quang Pham
(Under review) [pdf]

CodeMMLU: A Multi-Task Benchmark for Assessing Code Understanding Capabilities of CodeLLMs
Dung Manh Nguyen, Thang Chau Phan, Nam Le Hai, **Thong T. Doan**, Nam V. Nguyen, Quang Pham, Nghi D. Q. Bui
(Under review) [pdf]

DyConvSR: Lightweight Image Super-Resolution with Dynamic Convolutions
Tien-Thong Doan, Hoang-Giap Nguyen
(preprint) [pdf]

HONOURS & AWARDS

Anual merit-based scholarship - VNUHCM 2021, 2023

UAVS Hackatrix - Fix the Glitch competition - Top 5 VietNam & Australia 2021

Microsoft APAC AI for Accessibility Virtual Hackathon - Top 5 VietNam 2020

VietSeeds Full Undergraduate Scholarship 2019 - 2023

TECHNICAL SKILLS

Languages	Python, C/C++
Frameworks	PyTorch, Pytorch Lightning, Tensorflow, PySpark, Scikit-learn, Numpy, Pandas, Matplotlib
Tools	LaTeX, Git/GitHub
Machine Learning	LLMs, MoE, machine learning, deep learning, statistics, linear algebra.

REFERENCES

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