

THONG TIEN DOAN

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<https://doantienthongbku.github.io>

EDUCATION

Vietnam National University - Ho Chi Minh City University of Technology 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](#)

EXPERIENCE

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

- **Advisors:** [Dr. Quang Pham](#) (Former Research Scientist - Machine Intellection department, Institute for Infocomm Research (I2R), A*Star)
- **Research Topics:** Mixture of Experts (MoE), Large Language Model (LLM)
- Proposed **LibMoE**, a modular framework for efficient research, training, and evaluation of Mixture of Experts (MoE) algorithms in large language models, making large-scale MoE research accessible to a broader range of researchers.
- **Ongoing project:** Enhance Generalization and Specialization in Mixture-of-Experts
 - 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.

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

- Developed machine learning models to predict potential customers, achieving a 48% conversion rate in a customer care campaign, re-engaging 50,000 of 150,000 hibernating customers, and identifying 10,000+ new customers within the taxi ecosystem through Ewallet and over 20 partner banks in Vietnam.
- Built and maintained an internal ML system using big data technologies (Docker, Kafka, PySpark, FastAPI) for automated customer segmentation, enabling accurate identification of potential and loyal customers for targeted marketing.

Research Student December 2023 - December 2024
VAS Laboratory

- Advisors: [Dr. Giap Hoang Nguyen](#). Research topics: Real-time Image Super-Resolution.
- Develop a new method named DyConvSR - a fast and lightweight super-resolution network that achieves a comparable performance with contemporary state-of-the-art methods with over 10 times smaller on average (graduation thesis). ([project page](#))

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

- 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.

PUBLICATIONS

CodeMMLU: A Multi-Task Benchmark for Assessing Code Understanding Capabilities of CodeLLMs October 2024

*Dung Manh Nguyen, Thang Chau Phan, Nam Le Hai, **Thong T. Doan**, Nam V. Nguyen, Quang Pham, Nghi D. Q. Bui (Under review) [[pdf](#)]*

LIBMoE: A Library for comprehensive benchmarking Mixture of Experts in Large Language Models November 2024

*Nam V. Nguyen, **Thong T. Doan**, Luong Tran, Van Nguyen, Quang Pham (Under review) [[pdf](#)]*

DyConvSR: Lightweight Image Super-Resolution with Dynamic Convolutions December 2023

Tien-Thong Doan, Hoang-Giap Nguyen (preprint) [[pdf](#)]

ACHIEVEMENTS

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

- Developing Skinee app utilizes a YOLO model to identify the skin condition on the face, then it makes appropriate recommendations and connects users to physicians for the best care. [project page](#)

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

- Our team proposed the idea of developing an application that helps blind people read invoice information and read books using OCR and Text-to-Speech technology.

VietSeeds Full Undergraduate Scholarship 2019-2023

- VietSeeds is a non-profit organization committed to bringing **equal access** to college education for all students in Vietnam. VietSeeds Foundation Scholarship Program has been designed to assist students as an opportunity on their road to success, as well as to ease students' university experience.

TECHNICAL SKILLS

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