Trung Dao

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Publications

(*) denotes equal contribution.

[P1] **Trung Dao***, Duc Hong Vu*, Cuong Pham and Anh Tran. "EFHQ: Multi-purpose ExtremePose-Face-HQ dataset." CVPR, 2024.

[P2] **Trung Dao**, Thuan Nguyen, Thanh Le, Duc Vu, Khoi Nguyen, Cuong Pham, Anh Tran. "SwiftBrushV2: Make Your One-step Diffusion Model Better Than Its Teacher." ECCV, 2025.

[P3] Hao Phung*, Quan Dao*, **Trung Dao**, Hoang Phan, Dimitris N. Metaxas, Anh Tran. "DiMSUM: Diffusion Mamba - A Scalable and Unified Spatial-Frequency Method For Image Generation." NeurIPS, 2024.

[P4] Quan Dao*, Hao Phung*, **Trung Dao**, Dimitris N. Metaxas, Anh Tran. "Self-Corrected Flow Distillation for Consistent One-Step and Few-Step Image Generation." AAAI, 2025.

[P5] Anonymous. "SNOOPI: Supercharged One-step Diffusion Distillation with Proper Guidance." Under review, 2024.

[P6] Anonymous. "One-for-All: Unifying One-step and Few-step Image Generation in a Single Multi-Purpose Model." Under review, 2024.

Experience

- **VinAI Research** — Vietnam
  Research Resident — *March 2023 - Current*
  - **Advisor**: Dr. Anh Tran, Dr. Cuong Pham.
  - **Research Focus**: Generative vision models, emphasizing GANs and diffusion models.
  - **Past works**:
    - Improved quality of one-step and few-step text-to-image diffusion models **[P2, P4, P5, P6]** .
    - Introduced novel diffusion models architecture integrating Mamba in order to improve efficiency and performance, specifically when scaling up **[P3]**.
    - Developed a large-scale extreme-view face dataset to enhance synthesis quality and benchmark face recognition **[P1]**.
  - **Managing HPC cluster**: In charge of managing and optimizing cluster of 48 A100 GPUs. Boosted **x30** real-time GPU utilization by proposing a novel queuing strategy.
- **VinAI Research** — Vietnam
  AI Engineer — *December 2020 - March 2023*
  - **Advisor**: Dr. Dzung Nguyen, Dr. Anh Tran, Prof. Minh Hoai Nguyen.
  - **Face Recognition Module**

    Role: Module Owner.
    - Multi-node model training on large-scale datasets (up to 60M images); created a framework for profiling, parameter tuning, and optimizing the training process on SLURM.
    - Developed Face Recognition Models in various domains: Masked Face in Access Control, Surveillance CCTV (tested and daily used with the scale of 50K identities).
    - Customized Face Recognition Model is **ranked 8th Overall**: **ranked 2nd on Masked Dataset** and **ranked 10th on Multi Racial Dataset** on *ICCV21-MFR Competition* (July 2022).
    - Built multiple supporting apps for Face Recognition: Model Visualization, Video Inference, Data Labeling Tool (support semi-automated interclass/ intraclass cleaning).
    - Quantized and deployed a module of 3 models (up to 30 concurrent streams) on Qualcomm's AIC100, also deployed to NVIDIA's device using TensorRT and to Android using multiple inference engines (ONNX, MNN, and NCNN).
  - **Face Detection Module**

    Role: Module Co-Owner.
    - Trained multi-task masked-face detector for surveillance cameras, which needs to handle tiny faces and blocking artifacts.
    - Participated in building the AI SDK. Deployed/ Optimized various models to run on Xilinx devices. Involved in building an asynchronous inference flow for multi-stream (using DeepStream), the final SDK can run up to **60 streams** simultaneously on Xilinx ZCU104.
    - Built an Object Detection visualization tool based on an open-source project to analyze data and model output.
    - Built a framework to generate pseudo-masks for existing datasets using both 2D-based and 3D-based methods.
  - **Traffic Sign/Light Recognition Module for Autonomous Driving**

Role: Module Co-owner.

- Built a novel data pipeline upon CVAT-an open-source data labeling tool to aid the acceleration of video dataset labeling and handling hierarchical multi-label classification data type. The final dataset has *6 superclasses and 317 child classes.*
- Semi-Managed/Communicated with labeling team to guarantee the data's quality.
- Built a multi-task model based on the team's previous detector to handle long-tail distribution with a customized loss.
- Proposed customized hierarchical label loss for traffic sign classification model. The final model has **F1-Score of 98.3** on a private dataset with **171 classes**.
- Attempted to tackle various lightning conditions and track with ReID model for traffic signs.
- Quantized and deployed models using TensorRT for NVIDIA's device.

◦ **Noise Cancelling on Smartphone**

Role: Engineer.

In charge of converting models in various frameworks (PyTorch, TensorFlow, ONNX) into TFlite, quantizing and deploying on smartphones. Implemented and optimized process including FFT algorithm, reduced runtime by **40%**.

◦ **SmartData**

Role: Engineer.

Refactor existing data labeling pipeline of the current backend system, built in Flask. Added a new feature: An end-to-end multi-step labeling system to improve **30%** labeling time. Built some statistics on the company's data lake.

- **Got It Inc.** Vietnam
  Software Engineer *Oct 2019 - January 2020*
  ◦ **GotIt Backend System**
  - Worked on task scheduling for the email system.
  - Techstack: Celery, Flask, ReactJS, PostgresSQL
- **Holomia** Vietnam
  Game Developer *Feb 2018 - June 2019*
  ◦ **TopOfVietnam: VR Game**
  - In charge of the backend system: autonomous communication with the Game Booth System and users' database storage. The final product has been deployed at Landmark 81 SkyView and still stable while used by **thousand users**.
  - Techstack: UE4 C++ and Blueprints, Flask, PostgresSQL

Professional Services

Reviewer: ICLR(2025), WACV(2025), NeurIPS(2024), CVPR(2023, 2024, 2025), ECCV(2024), ACCV(2022, 2024).

Certificates, Honors and Awards

Academic Excellence Scholarship
Thang Long University *2016-2021*

Rank 2nd
VietAI Machine Learning Foundation Hanoi *2020*

Rank 2nd of Fintech track
Junction X Hanoi *2018*

Rank 76th
ICPC Asia Hanoi Regional Contest *2018*

Education

Thang Long University Vietnam
*Bachelor of Computer Science; GPA: 9.0/10.0 (**Valedictorian**)* *Aug 2016 - April 2021*

Skills Summary

Languages: C++, Python, Unix scripting, SQL
Tools: PyTorch, TensorFlow, TensorRT, ONNX, NCNN, MNN, OpenCV, Docker, Git, Jira

References

Dr. Dzung Nguyen: Head of Generative AI & AI Optimization Department, VinAI Research, Vietnam: v.dungnt244@vinai.io
Dr. Anh Tran: Head of Computer Vision Group of Research Department, Vietnam: v.anhtt152@vinai.io
Prof. Minh Hoai Nguyen: Deputy Director of Research Department, VinAI Research, Vietnam: v.hoainm@vinai.io