

# Trung Dao

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## PUBLICATIONS

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(\*) 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, 2024.
- [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." Under review, 2024.

## EXPERIENCE

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- **VinAI Research** Vietnam  
*Research Resident* March 2023 - Current
  - **Advisor:** Dr. [Anh Tran](#), Dr. [Cuong Pham](#).
  - **Research Focus:** Generative vision models, with emphasis on GANs and diffusion models.
  - **Past works:**
    - Improved quality of one-step and few-step text-to-image diffusion models [P2, P4] .
    - Introduced novel architecture integrating Mamba to diffusion models in order to improve efficiency and performance [P3].
    - Developed a large-scale face dataset to enhance face synthesis quality and benchmark face recognition models [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. [Hoai Nguyen](#).
  - **Face Recognition Module**  
*Role: Module Owner.*
    - Multi-node model training on large-scale datasets (up to 60M images) using HPC systems; optimized training process on SLURM by creating a framework for profiling and parameter tuning.
    - 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 module of 3 models (up to 30 concurrent streams) using TensorRT for NVIDIA's device, Qualcomm's AIC100, ONNX/MNN/NCNN for Android.
  - **Face Detection Module**  
*Role: Module Co-Owner.*
    - Built multi-task masked-face detector for surveillance cameras, which needs to handle tiny faces and blocking artifacts.
    - Deployed/ Optimized various modules to SDK running 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 open-source project to analyze data and model output.
    - Built a framework to generate pseudo-mask 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, PostgreSQL

- **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, PostgreSQL

## PROFESSIONAL SERVICES

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

## CERTIFICATES, HONORS AND AWARDS

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### Top 3 Extraordinary Students

*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

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### Thang Long University

*Bachelor of Computer Science; GPA: 3.79 (9.0/10.0 - Valedictorian)*

Vietnam

*Aug 2016 - April 2021*

### High School for Gifted Students Nguyen Hue

*French Major; GPA: 3.75 (9.0/10.0)*

Vietnam

*Aug 2013 - Aug 2016*

## SKILLS SUMMARY

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**Languages:** C++, Python, Unix scripting, SQL

**Tools:** PyTorch, TensorFlow, TensorRT, ONNX, NCNN, MNN, OpenCV, Docker, Git, Jira

## REFERENCES

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**Dr. Nguyen Tri Dung:** Senior Research Engineer, VinAI Research, Vietnam: v.dungnt244@vinai.io

**Dr. Tran Tuan Anh:** Senior Research Scientist, VinAI Research, Vietnam: v.anhtt152@vinai.io

**Dr. Mai Thuy Nga:** Thang Long University, Vietnam: mai\_nga@yahoo.com