NGHE-NHAN TRUONG (장예인) *
---AI Engineer---

Date of birth: 13/09/2000
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About me

I have a strong interest in **Deep Learning** and **Machine Learning**, with a primary focus on **Computer Vision** and **Image Processing**. My experience includes research on image registration, multimodal fusion, object detection, and model optimization for edge device deployment.

Education

❖ **Sejong University (Seoul, South Korea)** *2023-Aug2025 (Expected)*
- Master's Candidate in the Department of Computer Science and Engineering
- **GPA: 3.85/4.0**
- Thesis: End-to-End Facial Disguise Detection: Transformer-based Multimodal Fusion Approach for Video Surveillance.

❖ **Ho Chi Minh City University of Technology and Education (HCMUTE)** *2018-2022*
- Bachelor of Engineering in Electronics and Communications Engineering Technology
- GPA: 3.02/4.0
- Thesis: Research, Design, and Manufacture a Vietnamese Hand-Sign Language Teaching System for Deaf and Mute children.

Honors and Awards

- **A fully funded Mater program at Sejong University**. *Sep2023-Aug2025*
  Awarded a full scholarship from Sejong University and a research grant from my advisor's project.
- **Best student** with the highest thesis score **(9.1/10)** among all chairs at HCMUTE. *Aug2022*
- **Honor prize** for "Student of 5 merits" at HCMUTE *2022*
  "Molarity – Good Studying – Good Volunteer – Good Health – Good Integration"
- **Academic Excellence Scholarship** in 4 consecutive semesters at HCMUTE. *2020-2022*
  Given to top 3% students with highest GPA in each semester
- **Award** for Outstanding Student Achievement in Youth Month *2019*
- **Runner-up** in the National Science and Engineering Competition for High School Students. *2018*

Research Experience

❖ **Imaging and Intelligent Systems Laboratory (Sejong University)** *Sep2023-Present*
Research Assistant
Research Topics: **Deep Learning-based Video Surveillance, Multi-modal Image Fusion, Multimodal Image Registration.**
Teaching Assistant
Course: **Advanced FPGA with Zybo-Z7**, **Embedded Computing with EFM8BB1**.
- Planned the entire course curriculum and designed lecture materials for each session.
- Programmed all demo examples to support theoretical concepts.
- Created, assigned, and graded homework and projects to assess student learning.

❖ **HCMUTE Intelligent System Laboratory** ***(link)*** *Jan2020–Jan2023*
Research Assistant
Research Topics: **Hand-sign Language Detection, Multimodal Human Recognition in Dense Smoke Scenarios, Deep learning Implementation on Edge devices.**

*https://nhandoremon.github.io/TruongNgheNhan/

Industry Experience

❖ GaraSTEM Educational Technology Joint Stock Company *Jan2023–Jul2023*

R&D Intern, Entry-Level Engineer

- **Responsibility**:
- Taught STEM to high school students
- Built deep learning-based model for company product such as attendance system
- Developed an API to connect the recognition model with the web service.

Projects

❖ Facial Disguise Detection *March2024–Present*

- ***Objective*:**
- Detect individuals disguising their facial features using fake beards, latex masks, or accessories such as caps, glasses, wigs, and scarves.

- ***Contribution*:**
- Developing a coarse-to-fine multimodal image registration approach:
  - Coarse stage: Estimating distances and using interpolation to generate homography matrix.
  - Fine stage: Enhance accuracy by refining the distance with a Gaussian Field-based optimization function.
- Proposing a Transformer-based multimodal fusion method for facial disguise detection.
- Introducing the IISFD Database, a new facial disguise dataset.

- ***Funding*:**
- Name: Anomaly Detection in Video for Security Infrastructure
- Association: **IITP** (Institute for Information & Communications Technology Planning & Evaluation) in South Korea.
- Duration: April 2019 to December 2026

❖ Abnormal Behavior Detection *Sep2023–March2024*

- ***Objective*:**
- Use the KISA dataset and recognize actions (classes) like Abandonment, Intrusion, Violence, Fire Detection, Fall-down, and Loitering.

- ***Contribution*:**
- Applied YOLOv8 for object detection and implemented sequential learning to enhance model performance.
- Integrated object tracking to improve detection stability and facilitate post-processing.
- Leveraged MediaPipe and a Transformer-based action recognition network to detect sequential actions, particularly in cases like Falldown and Violence.

❖ Infrared and Thermal Fusion for Human Detection in Smoke Scenarios *2023*

- ***Objective*:**
- Develop a human detection system for rescue drones.

- ***Contribution*:**
- Introduced Light Heating Chessboard technique to align the images point to point.
- Proposed Yolov4-based Multimodal Fusion for Human Detection
- Implemented real-time experiments on an NVIDIA Jetson Nano.

❖ Vietnamese Hand-Sign Language Teaching System *(link)* *2022*

- ***Objective*:**
- Develop a complete self-learning system for Vietnamese hand-sign language that integrates both teaching and evaluation functionalities..

- ***Contribution*:**
- Constructed a 3D-printing electron-mechanical prosthetic arm to perform all gestures
- Detected both static and dynamic hand signs using YOLOv5, GRU, and MediaPipe.
- Designed a user-friendly interface (UI).

Activities

- **Singer for Internation conference**: Peace – Aspiration of Ancestor 2024
- **Certificate** of online 60km marathon contest *2022*
- **The 1st prize** in the duet of the Singing Talent Contest of Ho Chi Minh City *2021*
- **Green Summer Campaign** organized by Ho Chi Minh Communist Youth Union *2018 & 2020*
- **Spring Volunteer Campaign** organized by Ho Chi Minh Communist Youth Union *2018 & 2020*
- **President** of High school Science and Technology Club *2015-2018*

Skills

- **Foreign Languages:** **English** (Ielts 6.0), Korean (beginner)
- **Programming Languages:** Python, C/C++, Matlab
- **Frameworks:** Tensorflow, Pytorch, Paddle, Fast API, PyQT designer, Docker.

Publications

N. -N. Truong, T. -D. Do, T. -S. Le Nguyen, M. -T. Duong, T. -H. Nguyen and M. -H. Le, "A Vision-based Hand-sign Language Teaching System using Deep Neural Network: Methodology and Experiments," 2022 International Workshop on Intelligent Systems (IWIS), Ulsan, Korea, Republic of, 2022, pp. 1-6. *(link)*

N. -N. Truong, T. -D. Do, L. –A. Tran, T. –D. Nguyen and M. -H. Le, "Efficient Infrared and Thermal Imaging Fusion Approach for Real-time Human Detection in Heavy Smoke Scenarios", 2023 International Conference on System Science and Engineering, ICSSE 2023, Ho Chi Minh City, Viet Nam. *(link)*

Duong, M. T., Phan, T. D., **Truong, N. N.,** Le, M. C., Do, T. D., Nguyen, V. B., & Le, M. H. (2023). "An Image Enhancement Method for Autonomous Vehicles Driving in Poor Visibility Circumstances". Computational Intelligence Methods for Green Technology and Sustainable Development. GTSD 2022. Lecture Notes in Networks and Systems, vol 567. Springer, Cham. *(link)*

T. -D. Do, L. -A. Tran, T. -D. Nguyen, **N. -N. Truong**, D. -C. Park and M. -H. Le, "POCS-based Image Compression: An Empirical Examination," 2024 7th International Conference on Green Technology and Sustainable Development (GTSD), Ho Chi Minh City, Vietnam, 2024, pp. 45-50 *(link)*

References

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