Ngoc-Quan Ha-Phan

INITIALS

Address:	Seoul, South Korea
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RESEARCH INTERESTS

My interests lie within computer vision and deep learning, with a particular focus on perception systems for robotics and autonomous driving. Specifically, I work on environment representation tasks such as scene segmentation, object detection, which enables autonomous agents to depict and comprehend their surroundings. Moreover, I am open to exploring computer vision challenges in surveillance systems for smart infrastructure such as object tracking and behavior detection. My research experience includes: 3D LiDAR scene segmentation, instance-level reasoning and tracking for autonomous driving.

Keywords: *computer vision, deep learning, robotics, autonomous vehicle.*

EDUCATION

Soongsil University, Seoul, South Korea

Master of Science in Engineering; GPA: 3.98/4.5 (*Updating*)   Expect March 2026

- Research Topic: 3D Perception Systems for Autonomous Vehicle
- Advisor: Professor Myungsik Yoo

HCMC University of Technology and Education, Hochiminh City, Vietnam

B.Eng in Automotive Engineering Technology; GPA: 7.85/10   August 2023

- 100% English Taught
- Thesis: Vehicle Detection, Tracking, and Behaviour Analysis - Highest Thesis Grading (9.6/10)
- Principal Advisor: MSc. Trung-Hieu Nguyen; Associate Advisor: Dr. Vu-Hoang Tran

RESEARCH EXPERIENCE

ANDA Lab, Soongsil University, Seoul, South Korea

Research Assistant   March 2024 - present

Supervised by Professor Myungsik Yoo

- Conduct research regarding 3D perception for autonomous driving.
- Major investigator of the 5-year project funded by Korea Government (MSIT)

UTE-AI Lab, HCMC University of Technology and Education, Hochiminh City, Vietnam

Research Student   March 2023 - March 2024

Supervised by Dr. Vu-Hoang Tran

- Participated in training programs in AI-machine learning.
- Responsible for conducting research, development, and knowledge sharing for vehicle tracking in autonomous driving.

DPEE Lab, University of Science, Hochiminh City, Vietnam

Research Collaborator   June 2022 - March 2024

Supervised by MSc. Minh-Khue Ha

- Participated in training programs in Embedded Firmware design

- Contributor in Open Source project for Impedance Analyzer device, responsible for firmware development.

PROFESSIONAL
EXPERIENCE

BanVien Corporation, Hochiminh City, Vietnam
Embedded Software Engineer; Embedded Software Department   August 2023 - January 2024

Renesas Vietnam Company, Hochiminh City, Vietnam
Software Design Intern; SoC Software Department   October 2022 - April 2023

RESEARCH
PROJECTS

Unifying 3D and 4D LiDAR Panoptic Segmentation | *Git, Pytorch, LATEX*
Soongsil University, Funded by Korea Government (MSIT)   January 2025 - present
- Develop novel association techniques for temporal-aware object-level reasoning and segmentation in 4D LiDAR-based perception.
- Leverage insights from prior research on 3D panoptic segmentation to establish a unified framework for spatiotemporal segmentation.
- Contribute as principal investigator.

LiDAR Scene Completion and Occupancy Prediction | *Pytorch, LATEX*
Soongsil University, Funded by Korea Government (MSIT)   December 2024 - present
- Conduct research on enhancing the resolution of LiDAR driving scenes.
- Contribute as cooperative researcher/author, solely responsible for manuscript writing and editing [5].

3D LiDAR Panoptic Segmentation | *Git, Pytorch, LATEX*
Soongsil University, Funded by Korea Government (MSIT)   March 2024 - December 2024
- Investigate novel segmentation techniques to enhance metric performance across publicly available datasets.
- Implement and validate proposed frameworks for proof-of-concept.
- Compose manuscript and produce high-quality research papers [1], [6].
- Project page: https://anda-researchers.github.io/instance-embedding-lps/
- Contribute as principal investigator.

Vehicle Detection, Tracking, and Behavior Analysis | *Pytorch, Numpy, LATEX*
HCHC University of Technology and Education, Bachelor Thesis   February 2023 - June 2023
- Conduct research on vehicle tracking for vehicle perception systems.
- Investigate for a reliable feature-based tracking framework that fully exploits distinct vehicle appearance.
- Contributed as student/first author, compose paper and present at conference committee [2].

PUBLICATIONS
Selected works

[1] ***Ngoc-Quan Ha-Phan**, Hung Viet Vuong, and Myungsik Yoo, "Instance Embedding as Queries for DETR-based LiDAR Panoptic Segmentation," IEEE Transactions on Intelligent Vehicles, 2024 *(Q1 SCIE; IF: 14.0 (top 2%) (JCR-2023))*

[3] Ngoc-Luan Tran, **Ngoc-Quan Ha-Phan**, Thien-Luan Phan, Congo Tak Shing Ching and Minh-Khue Ha, "Design and Implementation of a Cost-Effective, Portable Impedance Analyzer Device with AD5941," IEEJ Transactions on Electrical and Electronic Engineering, 2024 *(Q4 SCIE; IF: 1.0 (JCR-2023))* (Co-first Author)

[2] ***Ngoc-Quan Ha-Phan**, Thanh-Nguyen Truong, Vu-Hoang Tran and Ching-Chun Huang, "A Reliable Feature-Based Framework for Vehicle Tracking in Advanced Driver Assistance Sys-

tems," 2023 Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC), 2023 *(IEEE Conference)*

[4] Ha, Minh-Khue, Thien-Luan Phan, Duc Hoang Ha Nguyen, Nguyen Hoang Quan, **Ngoc-Quan Ha-Phan**, Congo Tak Shing Ching, and Nguyen Van Hieu, "Comparative Analysis of Audio Processing Techniques on Doppler Radar Signature of Human Walking Motion Using CNN Models," Sensors 23, 2023 *(Q2 SCIE; IF: 3.4 (JCR-2023))*

SUBMITTED WORKS

[5] Kim Nhat Minh Nguyen, Hung Viet Vuong, **Ngoc-Quan Ha-Phan**, and Myungsik Yoo, "FuPaSCo: Long-range and Local Context Fusion for 3D Panoptic Scene Completion," **Submitted** to Image and Vision Computing (IMAVIS), 2025 *(Q1 SCIE; IF: 4.2 (JCR-2023))*.

[6] ***Ngoc-Quan Ha-Phan** and Myungsik Yoo, "Exploiting the Benefits of Temporal Information in the Realm of LiDAR Panoptic Segmentation," **Submitted** to IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2024 *(Q1 SCIE; IF: 20.8 (top 1%) (JCR-2023))*.

SKILLS

Technical Skills:

- Research: Having the abilities and initiatives to conduct research/investigation independently or as part of a team, Experience in Paper/Manuscript writing.
- Programming: Python, C/C++ (Familiar), LaTeX
- Frameworks: Pytorch, Numpy, Matplotlib, MMDetection/3D.
- Version control: Git, Github.
- Visualization: draw.io, InkScape, PowerPoint.

Language:

- Native in Vietnamese
- Fluent in English (7.5 iELTS)

REFERENCES

Myungsik Yoo, Full Professor, School of Electronic Engineering, Soongsil University, Seoul, South Korea, myoo@ssu.ac.kr

Vu-Hoang Tran, Ph.D, Department of Fundamentals of Electronic Engineering, HCMC University of Technology and Education, Hochiminh City, Vientam, hoangtv@hcmute.edu.vn

Minh-Khue Ha, MSc., Department of Physics and Electronic Engineering, University of Science, Hochiminh City, Vientam, hmkhue@hcmus.edu.vn