LUONG DUC NHAT

+81(70) 8478-0420 ◇ Tokyo, Japan
nhat.luongduc@gmail.com ◇ scholar.google.com ◇ github

EDUCATION

Ph.D. in Systems and Control Engineering, Tokyo Institute of Technology, Japan — Expected Sept. 2025

Master of Systems and Control Engineering, Tokyo Institute of Technology, Japan — 2020 - 2022

Bachelor of Mechatronics Engineering, Hanoi University of Science and Technology, Vietnam — 2014 - 2019

SKILLS

Technology stack — C++, Python, ROS, Reinforcement Learning, Motion and Path Planning, Git, Embedded Systems, IoT, SQL, Apache TVM, CAD

Soft Skills — English (IELTS 7.0), Japanese (JLPT N2), Vietnamese (native), Microsoft Office

EXPERIENCE

Intern — **November 2024 - June 2025**
Bosch Corporation — *Kanawaga, Japan*

- Requirements Management support in DOORs and JIRA.
- Support of verification and validation tests on System Test Bench and Vehicle.
- Test Specification creation on system and component levels (ECU/VCU).
- General customer project support tasks.
- Functional Safety Analysis support.

Intern — **April 2024 - August 2024**
TELEXISTENCE Inc. — *Tokyo, Japan*

- Supported assembling the robot arm Ghost model (120 units in 5 months).
- Managed mechanical and electrical spare parts warehouse.

Research Intern — **October 2023 - February 2024**
Mitsubishi Electric Corporation - Information Technology R&D Center — *Kanagawa, Japan*

- Contributing to open-source project Apache TVM, an open-source machine learning compiler framework for CPUs, GPUs, and machine learning accelerators.
- Supported compilation of unsupported AI models and attempted to improve the cost model of the TVM's Meta Schedule feature.

PhD Candidate — **September 2020 - present**
Tokyo Institute of Technology — *Tokyo, Japan*

- Using deep inverse reinforcement learning to learn the odor search strategy of the silkworm moth in nature and export a reward function from it to apply to the autonomous mobile robot for safety and rescue tasks.
- Developing a mixed reality app in Unity to visualize gas source probabilities and suggest odor sampling paths for gas leak localization. Data is exchanged between DIY gas sensors and Meta Quest 2 via MQTT protocol.
- Developed planning algorithms switching framework for odor source searching robot in the environment with obstacles.
- Constructed gas distribution map from sparse gas measurements collected by an autonomous mobile robot.

Back-End Developer — **October 2019 - September 2020**
Giao Hang Tiet Kiem Joint Stock Company — *Hanoi, Vietnam*

- Developed real-time data-assisted system on package handling, and work shifts for workers, and truck drivers (WMS and WCS) for E-commerce services.
- Designed and built up auto-sorting conveyor system units using the high-speed barcode reader to read the barcode of packages and sort the packages to the desired destination.
- Developed Android applications for phones and displays to visualize data related to the package sorting process.

Research Assistant — **March 2019 - May 2019**
National Taiwan University of Science and Technology — *Taipei, Taiwan*

- Implemented the integration of camera and ultrasonic sensors into Automated Guided Vehicles for warehouse environments.
- Designed path planning package for AGV in ROS using RRT* algorithm. The package was programmed in C++ and tested in Rviz simulation and real-world experiments with DIY mobile robot.

Intern **June 2018 - August 2018**
DKS Production and Trading Co., Ltd *Hanoi, Vietnam*

- Created precise 3D models of mechanical and electronic components using CAD software such as Autodesk Inventor and SOLIDWORKS, customized to meet specific customer requirements.

PUBLICATIONS

International Journal Papers

- **Duc-Nhat Luong**, Huu Quoc Dong Tran, and Daisuke Kurabayashi. 2024. "Reactive-probabilistic hybrid search method for odour source localization in an obstructed environment" *SICE Journal of Control, Measurement, and System Integration*, 17(1).
- **Duc-Nhat Luong**, and Daisuke Kurabayashi. 2023. "Odor Source Localization in Obstacle Regions Using Switching Planning Algorithms with a Switching Framework" *Sensors* 23, no. 3: 1140.
- Kei Okajima, Shunsuke Shigaki, Takanobu Suko, **Duc-Nhat Luong**, Cesar Hernandez Reyes, Yuya Hattori, Kazushi Sanada, Daisuke Kurabayashi. 2021. "A novel framework based on a data-driven approach for modelling the behaviour of organisms in chemical plume tracing" *J. R. Soc. Interface* 18: 20210171.
- Thi Thoa Mac, Chyi-Yeu Lin, **Duc-Nhat Luong**, Nguyen Gia Huan, Pham Cong Hoang, and Hoang Hong Hai. 2021. "Hybrid SLAM-based Exploration of a Mobile Robot for 3D Scenario Reconstruction and Autonomous Navigation" *Acta Polytechnica Hungarica* 18, no. 5, 197–212.

International Conference Papers

- **Duc-Nhat Luong**, Maki Shunsuke, Dan Hayato and Daisuke Kurabayashi. 2024. "Mapping Obstructed Environment Using High Degree-Of-Freedom Gas Sensor Device" *SICE Festival 2024 with Annual Conference*.
- **Duc-Nhat Luong**, and Daisuke Kurabayashi. 2023. "Multiresolution Grid Map-Based Odor Source Localization Via Multiple Planning Algorithms" *The SICE Annual Conference 2023*.
- **Duc-Nhat Luong**, and Daisuke Kurabayashi. 2022. "Switch planning algorithms for odor source localization in obstacle region based on the entropy gain rate of information" *AROB-ISBC-SWARM 2022*.

Domestic Conference Papers

- 渡辺 椋太, **Duc-Nhat Luong**, 志垣 俊介, 檀 隼人, 倉林 大輔. 2023. "障害物領域における逆強化学習を用いたカイコガの匂い源探索戦略の抽出", 第*24*回計測自動制御学会 システムインテグレーション部門講演会，Dec. 14-16，新潟，1G2-02，2023, （ポスター）
- 小川 登司, **Duc-Nhat Luong**, 志垣 俊介, 檀 隼人, 倉林 大輔. 2023. "多次元センシングデバイスの信号位相差に基づく匂い方向の推定 ", 第*24*回計測自動制御学会 システムインテグレーション部門講演会，Dec. 14-16，新潟，1G2-01，2023, （ポスター）
- Shunsuke Maki, **Duc-Nhat Luong**, Daisuke Kurabayashi. 2023. "Prototype and measurement experiment of a high degree-of-freedom sensing device for chemical plume tracing" *The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec)*, Volume 2023, Session ID 1P1-F24, Pages 1P1-F24-.
- Toshi Ogawa, **Duc-Nhat Luong**, Shunsuke Shigaki, Daisuke Kurabayashi. 2022. "Three-degree-of-freedom sampling strategy for chemical plume tracing in the two-dimensional plane", *The Proceedings of JSME annual Conference on Robotics and Mechatronics (Robomec)*, 2022, Volume 2022, Session ID 2A1-O09, Pages 2A1-O09-.