

# Duy-Nam Bui

*Ph.D. Student in Automatic Control*

📍 Linköping, Sweden  
📞 (+46) 76-74 256 10  
📠 (+84) 865 213 063  
✉️ duy-nam.bui@liu.se  
🎓 Duy-Nam Bui  
🔗 duynamrcv.github.io

## RESEARCH INTERESTS

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Multi-agent Systems, Network Science, Control

## EDUCATION

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### Linköping University

*Doctor of Philosophy in Automatic Control*

- Supervisor: Prof. Claudio Altafini

**Linköping, Sweden**

Aug. 2025 – Present

### Vietnam National University, Hanoi

*Master of Science in Electronics Engineering*

- Thesis title: “*Distributed Control strategies for Changing Multiple UAV Formation*”
- Supervisor: Dr. Hung Pham Duy
- Co-Supervisor: Dr. Manh Duong Phung

**Hanoi, Vietnam**

Oct. 2022 – Jan. 2025

### Vietnam National University, Hanoi

*Bachelor of Engineering in Robotics Engineering*

- Thesis title: “*Lyapunov-based Nonlinear Model Predictive Control for Trajectory tracking and Navigation of a Four wheeled omni-directional Mobile Robot*”
- Supervisor: Dr. Van Nguyen Thi Thanh

**Hanoi, Vietnam**

Aug. 2018 – Jun. 2022

## AWARDS AND HONORS

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### International Awards

- *Best Paper Award*, the 7th International Conference on Control, Robotics and Informatics 2024

### Domestic Awards

- *Excellent Employee 2024*, VinAI Research 2025
- *Master Scholarship*, Vingroup Innovation Foundation (VINIF) 2023, 2024
- *Valedictorian*, Robotics Engineering, Vietnam National University, Hanoi 2022
- *Best Under-graduation Thesis Award*, Robotics Examination Committee 2022

## ACADEMIC SERVICES

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### Reviewer

- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Aerospace and Electronic Systems
- IEEE Transactions on Vehicular Technology
- Swarm and Evolutionary Computation
- ISA Transactions
- Intelligent Service Robotics

## TEACHING

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### Undergraduate Courses

#### [TSRT19] Automatic Control

Lab Assistant (Lecturer: Prof. Johan Löfberg)

Linköping University, Sweden

Autumn 2025

#### [TSRT21] Dynamical Systems and Control

Teaching Assistant (Lecturer: Asst. Prof. Farnaz Adib Yaghmaie)

Linköping University, Sweden

Spring 2026

## WORK EXPERIENCES

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### VinAI Research

Automotive Embedded Engineer at Smart Mobility Division, full-time

Hanoi, Vietnam

Oct. 2023 – Aug. 2025

– **Parking Solutions:** Algorithms developed and system integrated into car to assist drivers in parking process.

+ **Fully Automatic Parking Assist** (*Smart Parking Innovation of the Year – Autotech Breakthrough Award 2024*)

+ **Reverse Autonomous Emergency Braking**

+ **Home-zone Park Assist**

- Developed optimal controller, with focus on Model Predictive Control solution.
- Developed and integrated motion planning modules (A\*, JPS, Hybrid A\*).
- Developed and enhanced the smooth movement of low-level controller.

### Rikkeisoft

Robotics Engineer at Rikkei AI Division, full-time

Hanoi, Vietnam

Jul. 2022 – Aug. 2023

– **Indoor Service Robot:** System integrated into assistance robot for home applications

- Developed a ROS-based automated navigation system.
- Developed and integrated an autonomous exploration, focus on frontier-based method.
- Designed and developed software architecture to integrate AI model into robot.
- Designed 3D structures for a mobile robot.

## PUBLICATIONS

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### Journal

- Duy-Nam Bui, Manh Duong Phung and Hung Pham Duy. “Event-based Reconfiguration Control for Time-varying Formation of Robot Swarms in Narrow Spaces”, *Intelligent Service Robotics*, vol. 18, pp. 647–659, May 2025.
- Thu Hang Khuat, Duy-Nam Bui, Hoa TT. Nguyen, Mien L. Trinh, Minh T. Nguyen and Manh Duong Phung. “Multi-goal Rapidly Exploring Random Tree with Safety and Dynamic Constraints for UAV Cooperative Path Planning”, *IEEE Transactions on Vehicular Technology*, pp. 1–12, April 2025.
- Thuy Ngan Duong, Duy-Nam Bui and Manh Duong Phung. “Navigation Variable-based Multi-objective Particle Swarm Optimization for UAV Path Planning with Kinematic Constraints”, *Neural Computing and Applications*, vol. 37, pp. 5683–5697, January 2025.
- Duy-Nam Bui and Manh Duong Phung. “Radial basis function neural networks for formation control of unmanned aerial vehicles”, *Robotica*, vol. 42, pp. 1842–1860, June 2024.
- Duy-Nam Bui, Thi Thanh Van Nguyen, and Manh Duong Phung. “Lyapunov-based nonlinear model predictive control for attitude trajectory tracking of unmanned aerial vehicles”, *International Journal of Aeronautical and Space Sciences*, vol. 24, pp. 502–513, April 2023.
- Manh Cuong Nguyen, Nhu Toan Nguyen, Duy-Nam Bui, and Tung Lam Nguyen. “Adaptive fuzzy lyapunov-based model predictive control for parallel platform driving simulators”, *Transactions of the Institute of Measurement and Control*, vol. 45, pp. 838–852, September 2022.

### Conference

- Duy-Nam Bui, Thu Hang Khuat, Manh Duong Phung, Thuan Hoang Tran, Dong LT Tran. “Model Predictive Control for Optimal Motion Planning of Unmanned Aerial Vehicles”, in *7th International Conference on Control, Robotics and Informatics (ICCRI)*, pp. 1–6, 2024.
- Duy-Nam Bui, Thuy Ngan Duong, and Manh Duong Phung. “Ant colony optimization for cooperative inspection path planning using multiple unmanned aerial vehicles”, in *IEEE/SICE International Symposium on System Integration (SII)*, pp. 675–680, 2024.
- Duy-Nam Bui, Manh Duong Phung, and Hung Pham Duy. “Self-reconfigurable V-shape formation of multiple UAVs in narrow space environments”, in *IEEE/SICE International Symposium on System Integration (SII)*, pp. 1006–1011, 2024.

- Thuy Ngan Duong, Duy-Nam Bui, Manh Duong Phung, and Duy Hung Pham. “Deployment of UAVs for optimal multihop ad-hoc networks using particle swarm optimization and behavior-based control”, in *11th International Conference on Control, Automation and Information Sciences (ICCAIS)*, pp. 304–309, 2022.
- Hoang-Anh Phan, Duy-Nam Bui, Tuan Nguyen Dinh, Bao-Anh Hoang, An Nguyen Ngoc, Dong Tran Huu Quoc, Ha Tran Thi Thuy, Tung Thanh Bui, and Van Nguyen Thi Thanh. “Development of a Vision System to Enhance the Reliability of the Pick-and-Place Robot for Autonomous Testing of Camera Module used in Smartphones”, in *International Conference on Engineering and Emerging Technologies (ICEET)*, pp. 1–6, 2021.