

Duc-Cuong VU, BSc.

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Website <https://duccuongvu.github.io>

Education

Master of Sci. in Automation and Control, Hanoi University of Science and Technology ([HUST](#)), Jul 2024 - present

- **Research project:** Design control structures for Parallel Platforms in Maritime applications
- **Funded by:** Master, PhD Scholarship Programme of Vingroup Innovation Foundation ([VinIF](#))

Bachelor of Sci. in Automation and Control, Hanoi University of Science and Technology ([HUST](#)), Oct 2020 - Mar 2024

- **Excellent degree,** GPA: 3.71/4 (Rank: 22/499, top 5%). Finished the 4-year BSc program in **just 3.5 years**.
- **Thesis:** Balancing, motion planning, and tracking control for ballbot systems [[pdf](#)] (The best thesis defense)

Selected publications

Journal *Ocean Engineering (SCIE Q1)* (2025)

Glocal trajectory generation and tracking control for AUVs with optimal coverage sensor networks [[pdf](#)]

Duc Cuong Vu*, Son Tran*, Tung Lam Nguyen, and Duc Chinh Hoang

Journal *Ocean Engineering (SCIE Q1)* (2025)

Lagrangian-based modeling and safety-critical controls for Stewart platforms under marine operations [[pdf](#)]

Duc Cuong Vu, Danh Huy Nguyen, Minh Nhat Vu, and Tung Lam Nguyen

Journal *IEEE Access (SCIE Q2)* (2025)

CBFs-based Model Predictive Control for Obstacle Avoidance with Tilt Angle Limitation for Ball-Balancing Robots [[pdf](#)]

Minh Duc Pham, **Duc Cuong Vu**, Thi Thuy Hang Nguyen, Thi Van Anh Nguyen, Minh Nhat Vu, and Tung Lam Nguyen

Journal *Results in Engineering (ESCI Q1)* (2025)

A novel approach of Consensus-based Finite-time Distributed Sliding Mode Control for Stewart platform manipulators motion tracking [[pdf](#)]

Duc Cuong Vu, Danh Huy Nguyen, and Tung Lam Nguyen

Journal *IET Cyber-Systems and Robotics (SCIE Q3)* (2025)

Unifying Hierarchical Sliding Mode Control and Control Barrier Function for Tilt Angle Constraint of a Ball-Balancing Robot [accpted for publication] [[pdf](#)]

Thi Thuy Hang Nguyen, **Duc Cuong Vu**, Minh Duc Pham, Thi Van Anh Nguyen, and Tung Lam Nguyen

Journal *International Journal of Robust and Nonlinear Control (SCIE Q1)* (2024)

Time-optimal trajectory generation and observer-based hierarchical sliding mode control for ballbots with system constraints [[pdf](#)]

Duc Cuong Vu, Minh Duc Pham, Thi Thuy Hang Nguyen, Thi Van Anh Nguyen, and Tung Lam Nguyen

Experience

Robotics Engineer at VinRobotics

Sep 2025 - present

Full-time

Hanoi, Vietnam

- Conduct pipeline for robot model standardization, kinematics calibration, system identification, and advanced control algorithm for industrial robots.

Research project assistant at HUST

Jan 2025 - present

Contract (Hybrid) supervised by [PhD. Chinh Hoang Duc](#) (PI) and [Assoc.Prof.PhD. Tung Lam Nguyen](#),

Hanoi, Vietnam

- Work under project: Robot navigation system integrating sensor network and wireless communication.
- Designed and developed a comprehensive MuJoCo-based simulation environment for AUVs, incorporating underwater dynamics, sensor feedback, environmental disturbances, and communication constraints to evaluate system performance.
- Implemented and validated advanced control algorithms for navigation, obstacle avoidance, and trajectory tracking, while collaborating on integration, troubleshooting, and authoring a peer-reviewed scientific paper.

Research project assistant at HUST

Jan 2025 - Oct 2025 (10 mos)

Contract (Hybrid) supervised by [PhD. Minh Nhat Vu](#) (PI) and [Assoc.Prof.PhD. Tung Lam Nguyen](#),

Hanoi, Vietnam

- Work under project: Advanced Control of a Ship-Mounted Stewart Platform for Marine Applications
- Funded by KIST Korea Institute of Science and Technology
- Designing and implementing advanced control algorithms for the Stewart platform, including safety-critical and robust control strategies tailored for marine environments.
- Implemented and validated advanced control algorithms for navigation, obstacle avoidance, and trajectory tracking, while collaborating on integration, troubleshooting, and authoring a peer-reviewed scientific paper.

Graduate Student Research at HUST

May 2024 - present

Part-time (Hybrid) supervised by [Assoc.Prof.PhD. Tung Lam Nguyen](#),

Hanoi, Vietnam

- Work under master project: Design control structures for Parallel Platforms in Maritime applications.
- Funded by VinIF.
- Designed and implemented advanced control algorithms for a Stewart platform in marine environments, supported by high-fidelity simulations (Simscape, MuJoCo) and validated through a full experimental setup (mechanical assembly, hardware integration, Linux real-time kernel, EtherCAT communication).
- Collaborated with cross-institutional teams on system integration, troubleshooting, and documentation, while authoring peer-reviewed publications and presenting outcomes to academic and industrial partners.

Student Intern at HUST

Oct 2021 - Apr 2024 (2 yrs 7 mos)

Internship (Hybrid) supervised by [Assoc.Prof.PhD. Tung Lam Nguyen](#),

Hanoi, Vietnam

- Work under bachelor project: Balancing, motion planning, and tracking control for ballbot systems.
- Developed mathematical models and simulation environments for 3D ballbot systems, focusing on nonlinear dynamics, trajectory generation, and safety constraints.
- Conducted research on modeling and simulation, advanced control strategies, and practical implementation for the Ball-Balancing Robot.
- Authored and co-authored peer-reviewed journal papers based on the project outcomes, including publications in the International Journal of Robust and Nonlinear Control (RNC) and IEEE Access.

Academic activities

Invited review for

Nonlinear Dynamics, IEEE Access

Teaching, Seminars and Talks

2025: Talk "MuJoCo for Advanced Physics Simulation: From manipulators to autonomous vehicles" for "Motion Control" master course at HUST and MoCAR seminar [[pdf](#)]

2025: Seminar "Underwater Vehicles" for modeling training of Autonomous Underwater Vehicle at MEG-MoCAR [[pdf](#)]

Honours & awards

Master, PhD Scholarship Programme Vingroup Innovation Foundation (VINIF)

Best Thesis Defense Award Hanoi University of Science and Technology

Skills

Programming	Python, C/C++, MATLAB for algorithm development and embedded robotics.
Modeling & Simulation	Simulink, Simscape Multibody, MuJoCo for kinematics, dynamics, and control validation.
Control & Optimization	Rigid-body dynamics, nonlinear control, MPC, estimation/observer design, optimization,
Robotics Systems	ROS2, EtherCAT, real-time Linux, embedded systems, automation.
Engineering Tools	Git, SolidWorks, PCB design, experimental platform development.
Research	Scientific writing, publications, presentations, literature analysis, experimental validation.