

## 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)

Global 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** *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 humanoid robot.
- Also responsible for State Estimation, Model Predictive Control (MPC), and Whole Body Control (WBC) for VinRobotics Humanoids robot.

**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 under-water 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.

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**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.

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**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.

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**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.

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## Academic activities

**Invited review for**  
*Nonlinear Dynamics (this is my first time as a reviewer)*

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**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](#)]

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## Honours & awards

**Master, PhD Scholarship Programme** Vingroup Innovation Foundation (VINIF)  
**Best Thesis Defense Award** Hanoi University of Science and Technology

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## Skills

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