Duc Tuan LAI

Duc Tuan Lai | laiductuan.30114@gmail.com | +84 396 088 920

Education

Bachelor of Mechatronics Engineering Technology 2022-2025

University of Science and technology of Hanoi (USTH)

- **GPA**: 15.74/20 (3.5/4) **(third of deparment)**
- **Graduate thesis[18.1/20]:** titled: "Design an Intelligent Controller for Quadruped robot via Digital Twin"
- **Highlight course:** Automatic Control, Embedded System, Product Design, Robotics.

Work Experience

Research Assistant Jan 2024 - present

Irobot-Laboratory of Intelligent Robot(Hanoi University of Industry)

- Implemented and evaluated PID and Nonlinear PD controller on nonlinear systems, including two-wheeled balancing robots, parallel manipulators.
- Applied Genetic Algorithm (GA) to optimize control parameters.
- Training quadruped robot model using reinforcement learning (TD3, ARS) in simulation.

Teacher Assistant 2024-2025

Product Design

- Guiding students in understanding the basic principles and rules of engineering drawing.
- Assisting in reading and analyzing technical drawings.
- Helping students create accurate geometric representations of products or components.
- Supporting students in implementing technical drawings in CATIA software.
- Providing feedback on assignments, correcting misunderstandings, and clarifying difficult concepts.

Extracurricular Activities

USTH 2024 - USTH Inovation Competition 2024 Hanoi, Aug 2024-Dec 2024

- A competition for USTH students, focusing on innovative ideas to improve campus life.
- Led a team of 5 to design a Quadruped Tracking Robot (QTBot) for campus navigation and education.
- In top 10 best project Idea and won a Consolation Prize (top 6/10) in final round.

Projects

Research and designing Quadruped robot controller Jul 2024- Jun 2025

- Implement PID, nonlinear-PD controller on quadruped robot leg control
- Research on training a quadruped robot using reinforcement learning TD3, ARS.

- Design digital twin version of quadruped robot.

Scholarships and Awards

- **Odon Vallet Scholarship - 2024** awarded by Rencontres du Vietnam to the top 152 excellent students and researchers in Northern Vietnam.
- **USTH Merit Scholarship 2022- 2024** awarded by USTH to students with outstanding academic performance.
- **USTH Internship Scholarship-2024** awarded by USTH to students with an excellent academic achievement over the 2 first academic years.

Skills and Languages

Technical Skills:

- **Programming Language:** Embedded C, Python (Reinforcement Learning), Object-oriented Programming(JavaScript and Python), Assembly.
- **Simulation:** MATLAB for control systems, Proteus for electrical design, Abaqus for mechanical analysis, ROS2 gazebo and Pybullet for robots systems.
- **Microcontrollers:** STM32, Jetson Nano.
- **Computer Aided Design(CAD):** Catia and SolidWorks.

Research skills: Academic writings, Latex.

Other languages: English(B2).