

# Long-Khac Nguyen

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## EDUCATION

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### Vietnam National University, Hanoi (VNU)

Hanoi, Vietnam

B.Eng. in Automation and Informatics

Sep 2021 - Dec 2026

- QS WUR Ranking 386 for Engineering and Technology ([Source](#))
- Top 4% in the cohort (GPA: 3.71/4.00)
- Transcripts: [Click here](#)

### National University of Singapore (NUS)

Singapore

Semester Exchange Program ([DiscoverNUS](#))

Aug 2025 - Dec 2025

- QS WUR Ranking 12 for Engineering and Technology ([Source](#))

## RESEARCH EXPERIENCE

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### Research Fellow

Singapore

Water & Energy Research Lab, EEE, Nanyang Technology University (NTU)

Feb 2026 - Current

- **Project:** Advanced 3D Wireless Power Transfer System for Autonomous Underwater Vehicles.
  - Optimizing mechanical design of autonomous underwater vehicles (AUVs).
  - Researching advanced communication for AUVs.
  - Improving communication between transmitter and receiver of the system.

### Research Intern

Chiayi, Taiwan

AISC Lab, AIM-HI Institute, National Chung Cheng University

May 2025 - Jul 2025

- **Project:** Smart Sensing Technology for Smart Manufacturing.
  - Developed a data-driven approach to estimate dynamic cutting forces in milling using 12 large-scale datasets, combining nonlinear system analysis with sparse identification to model and predict cutting forces.
  - **Results:** Achieved moderate prediction accuracy with  $R^2$  between 0.5–0.6 compared to ground-truth measurements.

### Remote Research

Remote

AISC Lab, AIM-HI Institute, National Chung Cheng University

Aug 2025 - Current

- **Project:** Prediction of cutting force model using AI and data-driven methods.
  - Implementing two ML models (Random Forest, XGBoost) and two data-driven models using 27 large-scale datasets collected via a Taguchi-designed experiment.
  - **Expected results:** Achieve high prediction accuracy with  $R^2 > 0.9$ .

### Student Research

Hanoi, Vietnam

Intelligent Control and Artificial Intelligence Lab, VNUIS

Sept 2022 - Current

- **Project:** Implementation Adaptive Control for 3-DOF Parallel Robot (2024)
  - Designed the mechanical model and physical prototype of a 3-DOF delta robot; applied adaptive fuzzy logic with backstepping control for robust trajectory tracking under uncertainties.
  - **Results:** Joint trajectory deviations  $< 0.15$  rad (vs. 0.3 rad), with stability reached in 0.15–0.2 s (vs. 0.3 s).
- **Project:** Detection of Personal Protective Equipment (PPE) in Construction Sites (2023)
  - Built a dataset of 2,632 construction site images across 5 classes; trained YOLOv5s with six activation functions (FReLU, LeakyReLU, Mish, HardSwish, SiLU, AconC).
  - **Results:** SiLU achieved Precision 84.8%, Recall 80.2%, mAP@0.5 83.9%, mAP@0.95 43.6%.

## PUBLICATIONS

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1. **Long Nguyen Khac.** et al. *Adaptive Fuzzy Logic in Backstepping Control for 3-DOF Parallel Robot*. International Conference on Advances in Information and Communication Technology, doi: [10.1007/978-3-031-80943-9\\_57](https://doi.org/10.1007/978-3-031-80943-9_57).
  - Main highlights: an adaptive fuzzy logic control system integrated with backstepping control for a 3-DOF delta robot.
  - Presentation: Mechatronics and Automation section in *The 3rd International Conference ICTA2024*.
2. **Long Nguyen Khac.** et al. *YOLOv5s Model with Applied Activation Functions for Personal Protective Equipment*

*Detection in Construction Sites*. Proceedings of National Conference on Smart Technology Applications in Industry 4.0 Smart City, and Sustainability. (2023)

- *Main highlights: a deep learning-based approach using YOLOv5s with six activation functions and a new dataset of 2,632 images for PPE detection.*

## WORKING EXPERIENCE

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### Engineering Intern

Hanoi, Vietnam

EOTEK Automation Solutions JSC

Mar 2025 - May 2025

- **Project:** AGV-based Virtual Simulation for Automated Warehouse Logistics – VINFAST Hai Phong
  - Sketched AGV/AMR traffic intersections using AutoCAD and simulated operations using Visual Components Premium 4.6.
  - Monitored and analyzed AGV/AMR behavior, identified errors, and troubleshoot issues.

### Collaborator

Hanoi, Vietnam

Vietnam E-Commerce and Digital Economy Agency, Ministry of Industry and Trade

Jul 2023 - Sep 2023

- **Project:** Consultancy Support and Sales Policy Development for E-Commerce Website (CPAPER)
  - Coordinated with SMEs across Dak Nong and An Giang province to develop e-commerce platforms.
  - Assisted in website design, content management, and prepared technical manual documents.

## TEACHING EXPERIENCE

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### Teaching Assistant

Hanoi, Vietnam

Faculty of Engineering and Technology, VNUIS

Sept 2023 - Dec 2024

- **Course:** Modeling and Simulation of Control Systems (Semester I, AY24/25)
  - Assisted 30 students across 7 lab sessions on MATLAB/Simulink for robotics, mechatronics, and process control; supported preparation of manuals and tutorial exercises.
  - Supervisor: Dr. Le Xuan Hai ([Email](#), [Website](#))
- **Course:** Microprocessors and Microcontrollers (Semester 1, AY23/24)
  - Mentored 30 students through 15 lab sessions on Embedded C with Arduino/STM32; debugging using Keil uVision, Arduino IDE, and STM32CubeIDE; supported tutorials and lab manuals.
  - Supervisor: Dr. Le Xuan Hai ([Email](#), [Website](#))

### Collaborator

Hanoi, Vietnam

Hung STEM Robotics Lab

Jul 2022 - Dec 2022

- **Project:** World Robotics Olympiad 2022 Vietnam
  - Mentored a team for WRO 2022 Vietnam; supported building new LEGO modules.
  - Engaged a STEM class of 20 students for 36 sessions using LEGO NXT at Grammar Newton International Bilingual School, Hanoi.

## HONORS AND AWARDS

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### NUS Enterprise Summer Programme in Entrepreneurship 2026

April 2026

- Awarded a fully-funded scholarship by NUS ASEAN SPARK Fellowship to join in NUS Enterprise Summer Programme in Entrepreneurship 2026.

### Kyushu University Spring-Semester Exchange Scholarship 2026

Jan 2026

- Selected as the only VNU student to receive the exchange scholarship in the Department of Mechanical Engineering, Kyushu University, Japan.

### NTU Singapore Global Connect Fellowship 2026

Jan 2026

- Awarded Most Popular Poster for the GCF final research poster presentation 2026.
- Selected as 1 of 39 young scholars worldwide (~2% acceptance from ~2,700 applicants) for a fully funded fellowship at NTU, Singapore.

### DiscoverNUS Scholarship

Aug 2025

- Selected as one of 8 excellent VNU students receiving a fully funded scholarship from NUS.

## Taiwan Experience Education Program (TEEP) Scholarship

Apr 2025

- Selected as one of 28 global students receiving a fully funded scholarship from the Ministry of Education, Taiwan, to intern at National Chung Cheng University (CCU).

## ASEAN in Today's World 2025 (AsTW)

Feb 2025

- Selected as one of 4 VNU representatives to participate in the AsTW program in Indonesia, funded by Kyushu University.

## TOSHIBA Scholarship

Sept 2024

- Selected as one of 20 excellent VNU students receiving the scholarship funded by TOSHIBA International Foundation.

## Temasek Foundation Specialist's Community Action & Leadership Exchange Program

Feb 2024

- Selected as one of 20 excellent VNU representatives to participate in the program in Vietnam and Singapore, fully funded by Temasek Foundation.

## The 2022 South-East Asia Circuit and System Society Hackathon (SEACAS Hackathon)

Dec 2022

- Received Fighting Spirit Prize in the competition.

## Academic Scholarship for Excellent Student

Fall 2021 - Spring 2025

- Six-semester recipient.

## SKILLS

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<b>General skills:</b>	Mathematical modeling, control systems design, embedded programming, mechanical design
<b>Programming skills:</b>	MATLAB, Python, Embedded C/C++, PLC
<b>Software &amp; frameworks:</b>	MATLAB/Simulink, SolidWorks, PyTorch, TIA Portal
<b>Spoken languages:</b>	Vietnamese (Native), English (IELTS 6.5: Writing 7.0), Chinese (Beginner)

## REFERENCES

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<b>Asst. Prof. Yun Yang</b>	Assistant Professor, School of Electrical & Electronic Engineering, NTU
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• Contact: <a href="mailto:yun.yang@ntu.edu.sg">✉ yun.yang@ntu.edu.sg</a>	
<b>Prof. Her-Terng Yau</b>	Director of AIM-HI, National Chung Cheng University
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<b>Assoc. Prof. Nguyen Nhu Tung</b>	Senior Lecturer, Faculty of Engineering and Technology, VNUIS
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