

# Quang Nhat Nguyen

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Citizenship: Vietnamese  
Languages: Vietnamese, English, Japanese



## Affiliated Research Institute

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April 2020 – Present

### Takeda Laboratory

Perception of Autonomous Driving Systems Research Group  
Department of Intelligent Systems, Graduate School of Informatics, Nagoya University

## Current Research Topic

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**Learn to classify materials from multispectral and multimodal perception data: A novel approach for semantic segmentation**

*Research interests:* Data science, Computer vision, Artificial intelligence, Intelligent systems, Autonomous driving systems, Digital twin reconstruction.

## Professional Experience

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September 2022

### Researcher Intern at RIKEN Centre for Computational Science (R-CCS)

High-Performance Computing (HPC) Computational Science Research Internship

April 2022 – Present

### Research Assistant at NEDO (New Energy and Industrial Technology Development Organisation)

November 2021 – March 2022

### Research Assistant at JARI (Japan Automobile Research Institute)

## Education

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October 2021 – September 2023 (expected)

### Master of Engineering in Electrical Engineering

Nagoya University, Japan

October 2017 – September 2021

### Bachelor of Engineering in Electrical Engineering, Electronics, and Information Engineering

Nagoya University, Japan

August 2014 – May 2017

### High School Diploma with specialisation in Mathematics

Le Quy Don High School for Gifted Students, Da Nang City, Vietnam

## Publications

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### Physics-based LiDAR waveform simulation method for realism improvement of driving simulators

Quang Nhat Nguyen, Alexander Carballo, and Kazuya Takeda

*International Symposium on Future Active Safety Technology toward zero-traffic-accident 2021 (FAST-zero'21)*, September 2021

### On radial Schrödinger operators with a Coulomb potential: general boundary conditions

Jan Dereziński, Jérémy Faupin, Quang Nhat Nguyen, and Serge Richard

*Advances in Operator Theory* 5, pp. 1132 – 1192, July 2020

DOI: [10.1007/s43036-020-00082-6](https://doi.org/10.1007/s43036-020-00082-6)

## Grants / Scholarships

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October 2021 – Present

### Japan Government's Scholar

Recipient of MEXT Scholarship as a graduate student, awarded by the Ministry of Education, Culture, Sports, Science and Technology of Japan

October 2017 – September 2021

### Japan Government's Scholar

Recipient of MEXT Scholarship as an undergraduate student, awarded by the Ministry of Education, Culture, Sports, Science and Technology of Japan

## Honours / Awards

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### Valedictorian graduate of Nagoya University School of Engineering (class of 2021)

September 2021, awarded by Nagoya University.

### Outstanding Presentation Award

August 2022, awarded by Nagoya University.

### Runner-up, National Computer Science Competition

2012, awarded by the Ministry of Education of Vietnam.

### First Prize, Municipal Mathematics Olympiad

2017, awarded by the Department of Education of the Municipal Government of Da Nang City, Vietnam.

### Third prize, Municipal Robotics Competition *ROBODNIC*

2017, awarded by the Association of the Science and Engineering Organisations in Da Nang City, Vietnam.

## Licenses / Qualifications

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### Stanford University – Specialisation in Machine Learning

Credential ID: [JV2NK7M6HMSN](#)

### Amazon Web Services – Specialisation in Cloud-based Application Development on AWS

Credential ID: [YWFXB8CS6DTJ](#)

## Skills

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Languages

**English** (advanced – IELTS 8.0), **Japanese** (fluent – JLPT N2), **Vietnamese** (native)

Programming, Electrical Engineering, Autonomous Driving development, and others

**Data science** and **AI implementation** in Python, **Cloud-based** and **containerised** application development, **Graphics engine** (Unreal Engine) programming, **3D CAD**, **Autonomous driving simulators** (CARLA, SVL, Autoware), **Electronics circuit** design and implementation.

## Research & Academic Experience

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Autonomous driving vehicle research, Automotive perception

### **Multispectral and multimodal data capturing system with multiple LiDAR sensors, 360°-surround visual imaging system, and 360°-surround thermal imaging system**

Roles:

- Design the system, using 3D CAD and mechanical structural strength simulator, to ensure sufficient mechanical strength and optimised field of view for every sensor.
  - Design and construct the sensors calibration mechanism.
  - Design, construct, and program the Raspberry Pi-based electronics circuit for sensors synchronisation using electrical signal protocol and ethernet communication protocol.
  - Design and construct a support system for equipment placement inside the data-capturing vehicle.
  - Assemble the system, install the sensors, and mount the system on top of the data-capturing vehicle.
- Project at Nagoya University, JARI, and NEDO, December 2021 – Present.

Autonomous driving vehicle research, Simulation environment creation from reality (real-to-sim)

### **Digital twin reconstruction with materials segmentation using 3D mapping, sensors fusion, and learning from multispectral and multimodal perception data**

Master's research project component, Takeda Lab, Nagoya University, February 2022 – Present.

Research project at R-CCS (RIKEN Centre for Computational Science)

### **Implementation of the LETKFCC (Localised Ensemble Transform Kalman Filter with Cross Correlation) and analysis of the cross-correlated observation and forecast error's influence on the assimilation accuracy**

Research project conducted in the Data Assimilation Research Group at R-CCS during the High-Performance Computing (HPC) Computational Science Research Internship, September 2022

Unreal Engine usage, C++ programming

### **Implementation of a simulated 3D LiDAR sensor in Unreal Engine 4 with customisable parameterisation to accurately simulate any real-world LiDAR sensor.**

Implementation of such module in Unreal Engine 4 using the UE4's C++ API with comprehensive parameterisation and Physics factors such as atmospheric attenuation and BRDF scattering coefficients based on different materials and incident angles. Takeda Lab, Nagoya University, October 2021 – January 2022.

Undergraduate research, Computer simulation

### **Monte Carlo simulation algorithm for LiDAR signal based on Physics and Optics**

Bachelor's research project under supervision of Prof. A. Carballo and Prof. K. Takeda, Graduate School of Informatics and Institutes of Innovation for Future Society, Nagoya University, Autumn 2020 – Autumn 2021.

Mathematics research

### **Mathematics research project on radial Schrödinger operators with a Coulomb potential and Whittaker equations**

Project contributor under supervision of Prof. S. Richard, Graduate School of Mathematics, Nagoya University, Autumn 2018 – Spring 2020

Programming, MATLAB

### **Numerical analysis and computational simulation of the chaotic motion of a double pendulum using Runge-Kutta method for a temporally discrete non-linear system of simultaneous equations**

Midterm project, course: Numerical Analysis, Autumn 2019, Nagoya University

Robotics, Leadership

### **Captain of robotics team "LQD-INVENTORS" in ROBODNIC competition**

2017 – Da Nang City, Vietnam

Roles: Overall management; Robot structure, electrical system, and pneumatic system design and construction; Strategies planning.

Outcome: Third prize overall, recognised for the uniqueness and creativity of robot design idea.

## Teaching Experience

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10/2018 – 2/2021

**Tutor for the following courses at Nagoya University:**

Mathematics for Machine Learning (Autumn 2020)  
Graph Theory (Spring 2020)  
Calculus I (Autumn 2019)  
Differential Geometry (Autumn 2018)