

Nguyen Hoang Khoi Tran

 trnguyen2010@gmail.com  nguyentranhk.github.io  LinkedIn  Google Scholar  Videos

Education

PhD student in Autonomous Systems

University of Sydney, Faculty of Engineering

Working at Australian Centre for Robotics (ACFR)

2023 - 2027

Sydney, Australia

Master in Control Engineering & Automation

Ho Chi Minh City University of Technology (HCMUT)

Research program, Top 1 in major

2018 - 2020

Ho Chi Minh City, Vietnam

Bachelor in Control Engineering & Automation

Ho Chi Minh City University of Technology (HCMUT)

Honour program, Top 5% in major

2014 - 2018

Ho Chi Minh City, Vietnam

Research Experience

Robust Global Localization in Autonomous Driving

PhD Thesis, University of Sydney

Developing robust estimation methods for global vehicle pose in GNSS-degraded environments.

2023 - 2027

Autonomous Delivery Robot

Research Project, Ho Chi Minh City University of Technology (HCMUT)

Supervised a student research project developing an indoor-outdoor autonomous platform for last-mile delivery.

2021 - 2023

Visual-Inertial-GNSS Integrated Localization System

Master's Thesis, Ho Chi Minh City University of Technology (HCMUT)

Developed a long-term accurate vehicle localization system combining stereo cameras, inertial sensors and GNSS.

2018 - 2020

Ceramic Furnace Temperature Controller

Collaborative Project, Nam Nha Company

Designed temperature controllers for ceramic furnaces with high thermal hysteresis and large heating volumes.

2019 - 2020

Robotic Arm Intuitive Teleoperation System

Bachelor's Thesis, Ho Chi Minh City University of Technology (HCMUT)

Developed an intuitive robotic arm teleoperation system using hand motion capture and augmented virtuality.

2017 - 2018

Teaching Experience

Academic Tutor in Aerospace, Mechanical and Mechatronic Engineering

University of Sydney, Faculty of Engineering

Practical instructor for MTRX1702: Mechatronics 1 (S2 2024, S2 2025), AMME1705: Introduction to Electromechanical Systems (S1 2024), and MTRX2700: Mechatronics 2 (S1 2025).

2024 - 2025

Lecturer in Control Engineering and Automation

Ho Chi Minh City University of Technology (HCMUT)

Lecturer for EE2019: Fundamentals of Control Systems.

Laboratory instructor for EE2019: Fundamentals of Control Systems, EE3007: Advanced Control Theory, EE3005: Industrial Instrumentation, EE3017: PC-Based Measurement and Control, EE3029: Devices and Automation Systems, and EE3065: Robotics.

2019 - 2023

Research Interests

Autonomous Systems, Vehicle Localization, Sensor Data Fusion, Robotic Perception, Teleoperation Systems, Intelligent Control Systems.

Technical Skills

C, C++, Matlab, Python

Programming computer applications, embedded systems, and control systems.

Eigen, OpenCV, OpenGL, Qt

Utilizing high-performance libraries for linear algebra, computer vision, graphics and user interface.

Robot Operating System (ROS)

Integrating functionalities in robotic systems using the ROS middleware.

Other hands-on skills

Hardware driver writing, Sensor system calibration, FPGA programming, Industrial robot programming, CAD design, PCB design.

Publications

InterKey: Cross-modal Intersection Keypoints for Global Localization on OpenStreetMap

Nguyen Hoang Khoi Tran, Julie Stephany Berrio, Mao Shan, and Stewart Worrall

arXiv preprint arXiv:2509.13857, 2025.

InterLoc: LiDAR-based Intersection Localization using Road Segmentation with Automated Evaluation Method

Nguyen Hoang Khoi Tran, Julie Stephany Berrio, Mao Shan, Zhenxing Ming, and Stewart Worrall

IEEE International Conference on Intelligent Transportation Systems (ITSC), Gold Coast, Australia, 2025.

OccCylindrical: Multi-Modal Fusion with Cylindrical Representation for 3D Semantic Occupancy Prediction

Zhenxing Ming, Julie Stephany Berrio, Mao Shan, Yaoqi Huang, Hongyu Lyu, **Nguyen Hoang Khoi Tran**, Tzu-Yun Tseng, and Stewart Worrall

IEEE International Conference on Intelligent Transportation Systems (ITSC), Gold Coast, Australia, 2025.

Autonomous Indoor Delivery Robot using Inertial Measurement Unit and 2D LIDAR

Duy Bach Nguyen, Khang Di Nguyen, **Nguyen Hoang Khoi Tran**

Bach Khoa Youths Science and Technology (BKYST) Conference, Ho Chi Minh City, Vietnam, 2023.

An EKF-Based Fusion of Visual-Inertial Odometry and GPS for Global Robot Pose Estimation

Nguyen Hoang Khoi Tran and Vinh-Hao Nguyen

IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE), Kedah, Malaysia, 2021.

A Tightly-Coupled Visual-Inertial System with Synchronized Time for Indoor Localization

Nguyen Hoang Khoi Tran and Vinh-Hao Nguyen

International Journal of Mechanical Engineering and Robotics Research, Vol. 10, No. 4, pp. 202-208, 2021.

Visits

Australian School of Robotic System (AUSROS)

7/2025

Queensland University of Technology (QUT)

Brisbane, Australia

Attended a 4-day event of lectures, workshops, and activities focusing on the fundamental science and transdisciplinary journeys that span across academia and industry in robotic systems.

KAIST EE Visit Camp

8/2019

Korean Advanced Institute of Science and Technology (KAIST)

Daejeon, South Korea

Attended a 3-day visit program at the School of Electrical and Electronics Engineering, toured laboratories, and met with faculty members.