

# Phạm Quang Hà

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## EXPERIENCE

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### Software Engineer

Oct 2022 – present

VinAI

- Develop a method to detect parking space in occupancy grid maps.
- Develop an improved EKF that fuses parking slots with wheel speeds.
- Utilize GPU's parallel computing to generate bird's eye views in real time.
- Build server softwares to send commands via TCP and stream images via RTSP in VF8 car.
- Integrate and test an auto-parking software suite for VF8 car.

### Graduate Research Assistant

Oct 2020 – June 2022

VIAM Lab, University of Technology, VNUHCM

- Develop a direct SLAM based on camera-LiDAR fusion.
- Build a ROS2-based autopilot software suite for USV.
- Simulate some autonomous capabilities for USV on Gazebo.
- Build a customized version of a Qt-based open-source ground control station for USV.

### Research Assistant

Jul 2019 – Oct 2020

VIAM Lab, University of Technology, VNUHCM

- Develop an online, graph-based 2D LiDAR SLAM.
- Build a Qt-based GUI to remotely command and monitor delivery AGV.
- Build a ROS-based autopilot software suite for delivery AGV.

## PROJECTS

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### Design and Control a Delivery AGV

Sep 2019 – Sep 2020

2019 FEEE Scientific Research for Student

- **Role:** I was responsible for building the autopilot software suite on embedded computer, implementing guidance and control laws, designing monitoring GUI on laptop.
- **Description:** We aim to make local delivery faster and cheaper without human intervention by designing an automated guided vehicle. Our team managed to design the electrical components of the vehicle, build ordering mobile application for buyers and monitoring GUI for shop-owners, as well as automate the vehicle's journey.
- **Result:** The project earned an acceptance certificate at the end of the program.

## EDUCATION

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- M.Eng.** University of Technology, VNUHCM Mar 2021 – Nov 2022
- **Major:** Control Engineering & Automation (*Research Program*)
  - **GPA:** 8.85/10.0
  - **Thesis:** Simultaneous Localization and Mapping based on Camera-LiDAR Fusion in Riverine Environments (*defended with 9.3/10.0*)
- B.Eng.** University of Technology, VNUHCM Sep 2016 – Nov 2020
- **Major:** Control Engineering & Automation (*Honors Program*)
  - **GPA:** 8.42/10.0
  - **Thesis:** Constructing Map and Collision-Free Path for Autonomous Vehicles (*defended with 9.58/10.0*)

## SCIENTIFIC PUBLICATIONS

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- [1] **Q.-H. Pham**, N.-H. Tran, and T.-D. Nguyen, “IMU-Assisted Direct Visual-Laser Odometry in Challenging Outdoor Environments,” in *International Conference on Green Technology and Sustainable Development*, Springer, 2023, pp. 497–508.
- [2] **Q.-H. Pham**, N.-H. Tran, T.-T. Nguyen, and T.-P. Tran, “Online Robust Sliding-Windowed LiDAR SLAM in Natural Environments,” in *2021 International Symposium on Electrical and Electronics Engineering (ISEE)*, IEEE, 2021, pp. 172–177.
- [3] N.-H. Tran, **Q.-H. Pham**, J.-H. Lee, and H.-S. Choi, “VIAM-USV2000: An Unmanned Surface Vessel with Novel Autonomous Capabilities in Confined Riverine Environments,” *Machines*, vol. 9, no. 7, p. 133, 2021.

## SKILLS

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**Maths:** Linear Algebra, Probability, Differential Equation, Vector Calculus, Calculus of Variations, Fourier Analysis, Numerical Analysis, Complex Analysis, Differential Geometry

**Language:** C/C++, MATLAB, Python, QML

**Framework:** ROS, ROS2, Gazebo, MATLAB/Simulink, PyTorch, Qt, OpenCV, PCL, Eigen, Boost/Asio, CUDA, OpenGL, GStreamer, TensorRT, Docker