Phạm Quang Hà

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Experience

Software Engineer Oct 2022 – present

VinAI

- Design and optimize embedded deep learning inference pipelines.
- Develop a heuristic 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.

Research Assistant Jul 2019 – June 2022

VIAM Lab, University of Technology, VNUHCM

- Develop direct SLAMs based on camera-LiDAR fusion and 2D LiDAR.
- Build ROS2-based autopilot software suites for USV and AGV.
- Simulate some autonomous capabilities for USV on Gazebo.
- Build a customized version of a Qt-based open-source ground control station for USV.
- Build a Qt-based GUI to remotely command and monitor AGV.

Education

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

[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

Maths: Linear Algebra, Probability, Statistics, Differential Equation, Vector Calculus, Calculus of Variations, Fourier Analysis, Numerical Analysis, Complex Analysis, Lie Theory

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

Framework: ROS, ROS 2, Gazebo, Mujoco, MATLAB/Simulink, PyTorch, Qt, OpenCV, PCL, Eigen, qpOASES, g2o, GTSAM, Boost/Asio, CUDA, TBB, OpenGL, GStreamer, TensorRT, NvMedia, CMake, Docker, Git, Conda