Tri Bien Minh

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Education

- **Karlsruhe University of Applied Sciences (Collaboration with Vietnamese German University -VGU)**
  M.Sc in Mechatronics and Sensor Systems Technology; German GPA: 1.6 (∼ 90% - Good) *2017*
  - ***Thesis: Design, Modeling and Control a novel V-frame Octocopter (Grade : 1.0 - Excellent)***
  - ***Fully funded tuition scholarship***

- **Lac Hong University**
  B.Sc in Mechatronics Engineer; GPA: 7.97/10.0 (Top 5% students in class) *2013*
  - ***Team leader a university robot team in ABU Robocon, a robotic competition for Asia pacific universities from 2011-2013***
  - ***Second prize in Nation Robocon Techshow competition with project Humanoid personal assistant robot in 2012***

Experience

- **Sereact Gmbh (with EU Blue card)** Stuttgart-Germany
  Robotics Software Engineer (Full-time) *Nov 2023 - Now*
  - **Software development for autononomous robot**:
    - Design and implement high-performance software control and interfaces for industrial robots,
    - Design and implement Digital Twin and Imitation Learning in simulation environment Unity and IsaacSim,
    - Develop motion planning and control systems for robotic manipulators,
    - Collaborate with engineering teams on robotic algorithm design and implementation.

- **Vietnamese German University (Collaboration with Frankfurt University of Applied Sciences)** Vietnam
  Robotics Lab Engineer (Full-time) *Oct 2017 - Oct 2023*
  - **Managing VGU's Robotics Lab & support research activities**: maintaining and managing laboratory equipment (Robot UR10e, Kuka Youbot, Turtlebot3, Realsense, Velodyne Lidar,..), materials, and computer systems through regular service and repair.
  - **Research on the intersection of Digital Twin, Machine Learning, and Human-Robot Collaboration**:
    - Creating a DigialTwin framework based on ROS for a UR10e collaborative robot in Unity (Code/Demo),
    - Implementing Position-based Visual Servoing (PBVS) with dual 6-DOF robotics manipulators (Demo),
    - Optimisation Algorithm for Reactive Motion Control manipulator (Demo).
    - Develop Machine Learning models for object detection with input data RGB-image and point-cloud (Demo).
    - Development of a novel V-frame Octocopter: design, kinematic analysis and simulation, (Demo).
    - And more...
  - **Lab tutorial & supervise undergraduate students**: Collaborate with professors from Frankfurt University of Applied Sciences and VGU Lecturers to prepare Lab tutorials: Embedded Intelligent System (ROS, OpenCV), Robotics and Autonomous Systems (ROS, Pytorch), Smart Systems in Automation (Python, UR PolyScope), Microcontroller (Atmel Studio), Digital Signal Processing (MatLab), Robotics Workshop (CAD and PCB Design) and supervising/co-supervising undergraduate students in robotics projects.

- **Nguyen Tat Thanh University** Vietnam
  Lecturer of Mechatronic Department *Nov 2013 - Jun 2017*
  - **Prepared & delivered lectures to undergraduate students**: on topics of mechatronics and robotics.
  - **Designed robots, machines & teaching kit for education purposes**: Upper body humanoid robot (14-DoF), Ant-like robot (23 DoF), RC Humanoid robot (19 DoF), PLC-Modular Production Station, 3-Axes CNC Machine.
  - **Administration work**: monitored undergraduate teaching, internship, and supervised robotics projects and machine designed for undergraduate students.

- **Robert Bosch Engineering and Business Solutions** Vietnam
  Intern. Mechanical Engineer *Feb 2016 - Aug 2016*
  - **Designed the charger docking and locking mechanism for the electric motorbike**: in the "Bosch Green Challenge project", and got awarded "Certification of Innovation Activities and Development" for this design.

- **Pepperl and Fuchs Co., Ltd.** Vietnam
  Intern. Process Engineer *Oct 2015 – Dec 2015*
  - **Implemented PDCA (Plan-Do-Check-Action) process**: for ultrasonic welding sensors, and improvement of quality sensors in the manufacturing process. Designed a new kind of machine, and planned some automation processes.

Selected Publications

- **A Digital Twin Implementation Framework for a Collaborative Robot Based on ISO 23247**. Tri B. Minh*, Phu Do, Hung Q. Nguyen, Khang H. V. Nguyen, Thao T.T Phan, *2023 The International Conference on Sustainable Energy Technologies* (2023), Springer Link, PrePrint. DOI, Code.
- **LiDAR-based Vehicle Detection by using DBSCAN Unsupervised Clustering approach**. Tri B. Minh*, Hien Vo Bich, *2023 6th International Conference on Control, Robotics and Informatics* IEEE , PrePrint, DOI.
- **Position-based Visual Servoing with Dual Manipulators**. Tri B. Minh*, (2023) PrePrint
- **Development of a novel V-frame Octocopter: Design, Kinematic Analysis, and Simulation using PID controllers with Ziegler Nichols tuning method**. Tri B. Minh*, Hien Vo, Hua Thanh Luan, *International Journal of Intelligent Unmanned Systems 2023* DOI, PrePrint
- **MiniRos: an autonomous UGV robot for education and research**. Tri B. Minh*, H. Thanh Luan, D. X. Phu, T. Quang Nhu and B. M. Duong, *2021 International Conference on System Science and Engineering (ICSSE) pp. 170-175*, DOI: 10.1109/ICSSE52999.2021.9538463, PrePrint, Code .
- **Robot Gesture Control Using Online Feedback Data with Multi-Tracking Capture System**. Khang Hoang Vinh Nguyen, Tri Bien Minh, Van Chi Le and Phu Xuan Do *The 7th International Conference on Advanced Engineering - Theory and Applications AETA 2022 pp. 121-130*, ISBN 1876-1119

Academic Referees

- **Associate Prof. Do Xuan Phu**: Associate Professor of Mechatronics and Sensor Systems Technology, Vietnamese-German University, Binh Duong, Vietnam — email: **phu.dx@vgu.edu.vn** — Personal website — Google Scholar
- **Dr. Vo Bich Hien**: Senior lecturer of Department Electrical and Computer Engineering Vietnamese-German University, Binh Duong, Vietnam, email: **hien.vb@vgu.edu.vn** — Google Scholar
- **Prof. Dr. Peter Nauth**: Professor of Computer Engineering and Robotics, Frankfurt University of Applied Sciences, Frankfurt am Main, Germany — email: **pnauth@fb2.fra-uas.de** — Personal website

Honors and Awards

- Best Junior Researcher Award from President of Vietnamese German University - Academic year, 2020-2021
- 100% full tuition highly competitive scholarship (Pepperl+Fuchs scholarship) - in Master course, 2014
- Global Entrepreneurship Training under the Global Entrepreneurship Education Program (GEEP), 2017
- Youth exchange JENESYS 2.0 Scholarship (JICA 2014) - Japan, 2014
- Second prize in Nation Robocon Techshow competition with project Humanoid personal assistant robot, 2012

Skills Summary

- **Programming**: Python, C++, MatLab
- **Frameworks**: ROS, Pytorch, TensorFlow, OpenCV, Open3D, Unity, OpenAI-Gym
- **Tools**: Software (Git, Docker), PCB Design(KiCad), 3D CAD Design(Solidworks)
- **Platforms**: MacOS, Linux, Windows, Arduino, Nvidia-Jetson, Raspberry Pi
- **Languages**: English: Professional working proficiency, German: Basic, Vietnamese: Native
- **Soft Skills**: Leadership, Event Management, TeamWork, Writing, Time Management

Certificate

- **TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning** — Coursera
  Credential ID: C6WDSPX7BKVH — *Nov 2021*
- **SIMATIC S7-1500 Programming 1 in The TIA Portal (TIA-PRO1)** — Siemens
  Programming PLC S7-1500 with TIA Portal — *Oct 2020*
- **Deep Reinforcement Learning NanoDegree** — Udacity
  Credential ID: 466QEDKQ — *May 2020*
- **Certification of Innovation Activities and Development** — BOSCH Vietnam
  Docking and Locking for Electric bike in BOSCH Station — *2016*
- **Global Entrepreneurship Training** — Handong Global University
  Entrepreneurship Training — *2017*
- **JENESYS 2.0 Program** — Japan
  Japan-East Asia Network of Exchange for Students and Youths (JENESYS) — *2014*

Volunteer Experience

- **Founder at Robotlab Facebook and Website** — Binh Duong, Vietnam
  Conducted online and offline technical STEM training for students — *Jan 2019 - Present*

- **Member at Jenesys 2.0 (Japan-East Asia Network of Exchange for Students and Youths)** — Japan
  Students exchange programs that are intended to create a bridge between Japan and country in Asia — *Jan 2014*

- **Team Leader at a Robocon ABU(Asia-Pacific Robot Contest) University team** — LHU, VietNam
  Technical lead, facilitating open communication, encouraging member growth to reach the team goals — *2011 - 2013*

Hand-on Hardware Experiments

- **Robot platform**: UR10e, Kuka Youbot, Turtlebot 3, NAO, DJI Drone ..
- **Sensor**: Velodyne, IMU-Xsens, Houkyo Lidar, Intel Realsense, SICK Lidar-Camera, Torque-Force Sensor..
- **Embedded Computer**: Nvidia Jetson family, Raspi-Pi, NUC, Arduino..
- **Actuator**: Various of Servo motor, BLDC Motor, Linear motor, Motor driver,..