Tri Bien Minh

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Education

- **Karlsruhe University of Applied Sciences (Collaboration with the Vietnamese German University -VGU)**
  M.Sc in Mechatronics System and Sensor Technology; GPA: 1.6 *2017*
  - ***Thesis: Design, Modeling and Control an Octocopter (Grade : 1.0 - Excellent)***
  - ***100% Full tuition scholarship***

- **Lac Hong University** Vietnam
  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

- **Vietnamese German University (Collaboration with Frankfurt University of Applied Sciences)** Vietnam
  Robotics Lab Engineer (Full-time) *Oct 2017 - Present*
  - **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. Work on assigned research projects in the fields of Autonomous Robotic Systems, Computer Vision, Embedded Systems, and Machine Learning. Some projects are: developing and maintaining ROS packages for the autonomous mobile robot Turtlebot3, Youbot and MiniROS, position-based visual servoing, and integrating MoveIt as a motion planner for the UR10e robot arm. Create a simulation environment UR10e robot in Unity, and Robotic Toolbox.
  - **Research on the intersection of Machine Learning and Visual Servoing**: for solving dynamic robot problems, such as dynamic grasping and handover tasks. Implementing Position-based Visual Servoing (PBVS) with dual 6-DOF robotics arms. Execute and develop Machine Learning models for object detection, and grasping with various input data like RGB-image and point-cloud. I am also interested in continuing to research more in 3D vision by developing more efficient real-time machine learning robotics grasping models.
  - **Lab tutorial & supervise undergraduate students**: Collaborate with Prof. Dr. Peter Nauth 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
  Lecture 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.

Publications

- **Position-based Visual Servoing with Dual Manipulators (ongoing project)**. Tri B. Minh*, PrePrint
- **LiDAR-based Vehicle Detection by using DBSCAN Unsupervised Clustering approach (accepted)**. Tri B. Minh*, Hien Vo Bich, *2023 6th International Conference on Control, Robotics and Informatics (ICCRI 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: 10.1108/IJIUS-08-2021-0087.
- **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.

- **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.
- **Adaptive Optimal Control for Upper Exoskeleton following Saturation Function**. Do Xuan Phu, Tri B. Minh, *2021 24th International Conference on Mechatronics Technology (ICMT)*, DOI: 10.1109/ICMT53429.2021.9687228.

Academic Referees

- **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
- **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
- **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

Honors and Awards

- Best Junior Researcher Adward in Vietnamese German University - Academic year, 2020-2021
- 100% full tuition scholarship (Pepperl+Fuchs scholarship) - in Master course, 2015-2016
- 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, Isaac Sim, 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, 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*
- **Convolution Neural Network in TensorFlow** — Coursera
  Credential ID: JFFHZFB8QZEF — *Nov 2021*
- **Natural Language Processing in TensorFlow** — Coursera
  Credential ID: PRNTD5GJ9G5C — *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,..