

# Do Van Minh

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## EDUCATION

<b>Nanyang Technological University (NTU)</b>	Singapore
<i>Master of Engineering in Computer Science</i>	<i>Jan. 2021 – Aug. 2023</i>
<ul style="list-style-type: none"><li>• <b>Thesis:</b> “Multi-Camera Tracking for Smart Urban Mobility”.</li><li>• <b>GPA:</b> 4.5/5.0 (<b>First-class Honours</b>).</li></ul>	
<b>The University of Da Nang, University of Science and Technology (DUT)</b>	Da Nang City, Viet Nam
<i>Bachelor of Engineering in Electronics and Telecommunications Engineering</i>	<i>Aug. 2011 – Aug. 2016</i>
<ul style="list-style-type: none"><li>• <b>Thesis:</b> “ Robotic Arm Design for Armless People Controlled by Head Gestures and Eyebrow”.</li><li>• <b>GPA:</b> 8.14/10 or equivalent to 3.36/4.0 (<b>Distinction</b>), <b>ranked 5/240 in class</b>.</li><li>• <b>Awards:</b><ul style="list-style-type: none"><li>GE (General Electric) Foundation Scholar-Leader Scholarship (US\$3450), <b>one of ten</b> undergraduate students in Vietnam 2012 – 2016</li><li>3rd prize at the Science Research Contest of DUT 2016</li><li>1st prize at Vietnam TI MCU Design Contest of Texas Instrument Company 2015</li><li>Exchange program at Utsunomiya University in Japan 2015</li><li>January Star Award from Viet Nam Students Association 2015</li></ul></li></ul>	

## WORKING EXPERIENCE

<b>School of Computer Science and Engineering, NTU</b>	Singapore
<i>Master of Engineering in Computer Science   AI, Computer Vision &amp; Embedded System</i>	<i>Jan. 2021 – Aug. 2023</i>
<ul style="list-style-type: none"><li>• <b>Multi-Camera Tracking for Smart Urban Mobility.</b><ul style="list-style-type: none"><li>- Devised and implemented an enhanced multi-camera tracking in a distributed camera network on an ARM processor, significantly boosting system efficiency and performance on embedded platforms.</li></ul></li></ul>	
<b>School of Computer Science and Engineering, NTU</b>	Singapore
<i>Research Engineer   AI, Computer Vision &amp; Embedded System</i>	<i>Nov. 2016 – Now</i>
Key contributor to major projects like <a href="#">TUMCREATE</a> and <a href="#">PUDO</a> , focusing on transport and vehicle interaction in Singapore.	
<ul style="list-style-type: none"><li>• <b>Infrastructure to Vehicle (I2V) Communication for Driving Assistance</b><ul style="list-style-type: none"><li>- Developed real-time, efficient computer vision algorithms for traffic analysis on embedded systems, reducing cost and power usage.</li><li>- Analyzed traffic data from 19 cameras, using object detection and tracking for urban traffic management.</li><li>- Implemented and optimized a lightweight AI model for vehicle tracking and crowd counting, enabling 4 edge devices (Odroid N2+) to process live feeds from 9 cameras and communicate with Autonomous Vehicles.</li><li>- Supervised and trained 15 student assistants in AI data preparation and annotation.</li></ul></li><li>• <b>Sensing and Management for Agile Transport</b><ul style="list-style-type: none"><li>- Designed and configured multiple cameras (27 cameras) at 8 locations, collecting high-quality videos for accurate traffic demand analytics.</li><li>- Developed lightweight computer vision algorithms, trained and optimized AI models on embedded platforms for real-time traffic density estimation, illegal parking detection, illegal entry detection, virtual right of way, crowd counting, and vision-based smart traffic light systems.</li><li>- Supervised algorithmic optimization and field testing on various embedded platforms (Odroid XU4, Odroid</li></ul></li></ul>	

N2+), contributing to traffic management innovations at NTU and Singapore-wide.

- **Simultaneous Localization and Mapping (SLAM)**

- Improved visual SLAM robustness by refining dynamic outlier removal in RGB-D/stereo data, bolstering pose estimation and mapping accuracy.
- Advanced loop closure detection in long-term SLAM, minimizing false matches with location semantics, and deployed on embedded systems.

**Electronics and Telecommunication Department, DUT**

Viet Nam

*Undergraduate Research Assistant* | IoT & Embedded System

Jun. 2014 – May. 2016

- **Team leader, Robotic Arm Design for Armless People project**

- Designed and programmed a robotic arm with an integrated circuit and microcontroller, enabling user control for item manipulation.

- **Team leader, Smart Home project**

- Engineered power sources and electronic circuits using sensors and microcontrollers, and developed algorithms for automated control of electronic devices in various scenarios.

## TECHNICAL SKILLS

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- **Software and Hardware Experience**

- **Language:** Python, C/C++.
- **Framework:** Pytorch, Tensorflow, NCNN, OpenCV, ROS.
- **Hardware:** sensors (humidity, lighter, infrared, temperature, accelerator, cameras), microcontrollers (8051, MSP430, Arduino), embedded platforms (Odroid N2+, Odroid XU4, Jetson TX1).
- **Software tools:** Git, Visual Studio Code, Docker.
- **Deep learning skills:** Data preparation, learning techniques (transfer learning, distillation learning, supervised, self-supervised learning, and unsupervised learning), compression techniques (quantization, pruning), deploying deep learning models on embedded devices.
- **Computer vision skills:** Used to work with change detection, image classification, object detection, image segmentation, crowd counting, and single and multi-camera tracking.

- **Language Proficiency**

- Vietnamese: Native language.
- English (IELTS 6.5, tested on Dec 2020).

## PUBLICATION

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- **Van Minh Do**, Meiqing Wu, Siew-kei Lam, and Thambipillai Srikanthan. "Real-time Deep Visual Tracking on a Tight Budget", 2024 ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS).
- **Van Minh Do**, Meiqing Wu, Siew-kei Lam, and Thambipillai Srikanthan. "Real-time Multi-Camera Tracking in Distributed Camera Networks", 2024 30th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS)
- Singh, G., Wu, M., **Van Minh Do**. and Lam, S.K., 2022. Fast Semantic-Aware Motion State Detection for Visual SLAM in Dynamic Environment. IEEE Transactions on Intelligent Transportation Systems, 23(12), pp.23014-23030. ([Link](#)).
- Gaurav Singh, Meiqing Wu, Siew-Kei Lam, and **Van Minh Do** "Hierarchical Loop Closure Detection for Long-term Visual SLAM with Semantic-Geometric Descriptors", 24th IEEE International Conference on Intelligent Transportation (ITSC), September 2021. ([Link](#)).