# NGUYEN Van Binh

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## Personal Statement

I am Van Binh, a third year Computer Engineering undergraduate at the National University of Singapore (NUS). As part of the NUS Overseas Colleges Program, I aim to secure a six-month technical internship at a startup in Paris from January to July 2023.

**About me**

I am an enthusiastic learner and product-maker who loves contributing to Software Engineering and AI-related projects. Although my background in high school was Physics, I was attracted by latest technical advancements and decided to pursue a higher education in Computer Engineering, which gives me a chance to learn about both hardware and software aspects. I am also taking minors in Management and Data Engineering. The former teaches me running a business, and the latter equips me with the necessary skills to harness the power of data.

I am passionate in learning new technologies and applying what I have learned to build things, such as Alex, a teleoperated vehicle with search and rescue functions, or CLICK, an all-in-one CLI desktop app for university students. Specifically, together with my teammate, I have been developing and maintaining ActiveNUS, a website promoting time management techniques and study methods. Building ActiveNUS not only improves my technical skills but also sparks my passion for programming and building software products. I also enjoy making small and fun things like Stitch, a Discord bot that predicted Euro 2020 match results.

In addition, I have strong leadership qualities and good time-management skill. Since high school, I have organized several events and charity projects. Particularly, I was the President of my high school debate club. These experiences taught me the importance of teamwork, how to work with people, and how to multitask well. Despite my tight schedule, I continue to excel academically. I represented Vietnam National Team in the European Physics Olympiad and was awarded the Bronze Medal. I'm also on track to graduate with a first–class honor with 2 times being named in NUS Deans' List for outstanding academic result.

**Work experience**

Last summer, I worked as a Machine Learning Engineer Intern at Neuron Mobility, a scooter sharing manufacturing and operating company. At Neuron, I developed scooter parking image classification models that achieve > 95% accuracy. It promotes better parking behaviors in the cites and saves the company US$200,000 annually. I have also involved in building internal tools using Django REST Framework and performing experiments with neural processing unit for AI-on-the-edge tasks on scooters.

Besides, I am working as a Research Assistant at NUS Department of Electrical and Computer Engineering. We aim to develop a framework to run hardware–friendly spiking neural networks, which mimic human brain learning mechanism. This is also the third semester I work as a Teaching Assistant for several modules, including IT5003 – Data Structure and Algorithms for Master students and receive good feedback (4.8/5.0 teaching feedback point). Researching and teaching not only consolidates my technical knowledge but also help me improve soft skills.

**How can I contribute**

I can contribute to the company in various technical areas, especially machine learning with the focus on computer vision. With my experience in web development, I can also be a good fit for backend or full-stack software development teams. I am open for a role in robotics and data engineering as well. Furthermore, I will not hesitate to learn new skills that are more relevant to the company's projects.

In conclusion, with my skill sets, experiences, strong self-motivation, and other personal traits, I believe can contribute significantly and be a great addition to the company.

## Education

| | | |
|---|---|---|
| Aug 2020 - Present | **National University of Singapore**<br>Bachelor of Computing (Honours) in Computer Engineering<br>Cumulative Average Point: 4.86 / 5.00<br>*(Course details in Appendix A)* | Singapore |
| Jan 2022 – Present | **NUS Undergraduate Research Opportunities Program**<br>• Analyze the tradeoffs in learning algorithms for spiking neural networks<br>• Design architecture and write assembly instructions for hardware accelerators for spiking neural networks on FPGA | Singapore |

## Work Experience

| | | |
|---|---|---|
| May 2022 – Aug 2022 | **Neuron Mobility**<br>*Machine Learning Engineer Intern*<br>*(Testimonial in Appendix B)*<br>• Trained and deployed machine learning models for scooter parking image classification on AWS SageMaker that achieve > 95% accuracy, detect bad parking behaviors with 0.9–0.98 precision scores and save US$200,000 annually<br>• Built and dockerized a RESTful backend for an in-house annotation platform using Django REST Framework and PostgreSQL<br>• Performed experiments with RK1808 neural processing unit (NPU) for on-chip surface detection task on scooters | Singapore |
| Aug 2021 - Present | **School of Computing, National University of Singapore**<br>*Teaching Assistant for IT5003 Data Structure and Algorithm*<br>• Conduct classes of ~20 Master students, review related concepts and techniques, and showcase live coding in Python<br>• Provide consultations, grade, and give feedback to problem sets<br>• Teaching feedback: 4.6 and 4.8/5.0 (faculty average: 4.2/5.0) | Singapore |
| Jan 2021 – May 2021 | **Faculty of Engineering, National University of Singapore**<br>*Teaching Assistant for CG2111A Engineering Principles and Practice II*<br>• Provided consultations during lab sessions and guidance for the final course project, graded lab reports<br>• Related topics: bare-metal programming, communication protocols, Lidar, SLAM, power management | Singapore |

## Projects

| | | |
|---|---|---|
| May 2021 – Aug 2021 | **ActiveNUS** (activenus.herokuapp.com/)<br>*Advanced Level of Achievement– NUS School of Computing Orbital 2021*<br>*Description:* a web application promoting efficient time management techniques and study methods<br>• Designed and built backend using Django and PostgreSQL, frontend using VueJS and AJAX<br>• Complied to standard Software Development Life Cycle (planning, designing, developing, testing, and deploying) | Singapore |
| Jan 2022 – May 2022 | **RTOS Project** (github.com/nvbinh15/cg2271-rtos-project)<br>*Description:* a semi-automated car with light and sound functions based on Keil RTX operating system, breaks course's running time record<br>• Designed hardware and software high level architecture; implemented motor movements and communication protocols (Wifi and UART)<br>• Developed web controller interface using HTML/CSS/JavaScript<br>• Manage threads and processes, integrated components (LEDs, motor, buzzers, autorun) to the main module | Singapore |
| Aug 2021 – Nov 2021 | **CLICK** (github.com/AY2122S1-CS2113T-T09-4/tp)<br>*Description:* an all-in-one CLI desktop app for managing school modules, tracking food consumption, time scheduling, and journaling built with Java<br>• Developed managing module function and core components (parser, storage, UI, logger, and exception handler)<br>• Wrote unit test, set up and performed automated and manual testing and responsible for project management, review pull requests | Singapore |

## Scholastic Achievements

| | | |
|---|---|---|
| Aug 2021 – May 2022 | **NUS Faculty of Engineering and School of Computing Deans' List**<br>• Awarded to top 5% students with the best academic result of cohort | Singapore |
| June 2019 | **European Physics Olympiad**<br>• Represented Vietnam National Team and achieved the Bronze Medal | Latvia |
| Jan 2019 | **Vietnam National Excellent Student Competition**<br>• Achieved Second Prize in Physics | Singapore |

## Hackathons

| | | |
|---|---|---|
| Jan 2022 | **Hack and Roll 2022** (devpost.com/software/disneylang)<br>• Developed and deployed a fun and annoying Discord bot that censors profanity and replies to user's message using Natural Language Toolkit | Singapore |
| Dec 2019 | **Champions @ Vietnam National AWS DeepRacer League**<br>• Developed reward functions and trained reinforcement learning models loaded to a physical autonomous car that completed a racing lap in 9.625s | Singapore |

## Extracurricular Activities

| | | |
|---|---|---|
| Aug 2017 – Aug 2018 | **President @ Phan Debate Club**<br>• Led high school debate club of 20+ members<br>• Organized events, sharing sessions, trainings, and debate competitions<br>• Collaborated with debate clubs nationwide and reached 1000+ followers on club's social media platforms | Vietnam |

## Skill Sets & Proficiency

| | | |
|---|---|---|
| **Programming** | Python, C/C++, Java, RISC Assembly | Proficient |
| **Web Development** | Django, Django REST Framework<br>HTML/CSS/JavaScript, VueJS | Proficient<br>Intermediate |
| **Database & Data Processing** | SQL, PostgreSQL<br>Hadoop, MapReduce, Spark | Proficient<br>Intermediate |
| **Embedded Systems** | FPGA Programming (Verilog, HLS),<br>ARM-based MCU, Arduino, Raspberry Pi | Proficient<br>Proficient |
| **AI/Machine Learning** | Scikit-Learn, PyTorch, TensorFlow, Keras, AWS SageMaker | Proficient |
| **DevOps** | Docker, AWS Cloud Services | Intermediate |
| **Version Control** | Git, GitHub, BitBucket | Proficient |
| **Non-technical Skills** | Team player, Communication<br>Project Management, Leadership | Proficient<br>Intermediate |

## Language Proficiency

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|---|---|
| **Spoken** | English – fluent; Vietnamese – native |
| **Written** | English – competent; Vietnamese – native |

## Additional Information

Passionate about latest technological advancement. Interested in soccer and table tennis

**APPENDIX A**

**Degree:** Bachelor of Computing (Honours) in Computer Engineering
**Minors:** Management and Data Engineering
**Cumulative Average Point: 4.86 / 5.00**

| Year | Level | Course Description | Grades |
|---|---|---|---|
| Aug – Nov 2020 | Year 1/Semester 1 | Engineering Calculus | A+ |
| | | Differential Equations for Engineering | A+ |
| | | Engineering Principles and Practice I | A- |
| | | Discreate Structures | A- |
| | | Programming Methodology | S |
| | | Quantitative Reasoning | S |
| Jan – May 2021 | Year 1/Semester 2 | Engineering Principles and Practice II | A- |
| | | Data Structures and Algorithms | A+ |
| | | Digital Design | A+ |
| | | English for Academic Purposes | S |
| | | A Brief History of Science | S |
| | | Linear Algebra for Engineering | A+ |
| Aug – Nov 2021 | Year 2/Semester 1 | Accounting for Decision Makers | A+ |
| | | Career Catalyst | CS |
| | | Transistor-Level Digital Circuits | A+ |
| | | Computer Organization | A+ |
| | | Independent Software Development Project (Orbital) # | CS |
| | | Effective Communication for Computing Professionals | S |
| | | Software Engineering & Object-Oriented Programming | A- |
| | | Asking Questions | CS |
| | | Probability and Statistics | A+ |
| Jan – May 2022 | Year 2/Semester 2 | Signals and Systems | A+ |
| | | Real-Time Operating System | A+ |
| | | Database Systems | A |
| | | Decision Analytics Using Spreadsheets | A+ |
| | | Undergraduate Research Opportunities Program | IP |
| | | The Mathematics of Games | A |
| Jun – Jul 2022 | Year 2/Special Term | Introduction to Artificial Intelligence | A+ |
| Aug – Nov 2022 | Year 3/Semester 1 | Computer Engineering Capstone Project | In-progress |
| | | Design and Analysis of Algorithms | In-progress |
| | | Big Data Systems for Data Science | In-progress |
| | | Programming for Business Analytics | In-progress |
| | | Data Engineering Principles | In-progress |
| | | Undergraduate Research Opportunities Program | In-progress |

# The **Independent Software Development Project (Orbital)** is a summer program in which students work in pair to develop their own project. I worked with my friend to build ActiveNUS, a website that promotes effective time management and learning methods. It composed of a to do list tracker, a project management dashboard, a pomodoro timer, and flashcards. Especially, we developed a calendar with automatic scheduling capability that helps user plan their work based on spaced-repetition method. We used Django and PostgreSQL to build backend, HTML/CSS/JavaScript, VueJS, and AJAX for frontend. ActiveNUS is deployed at activenus.herokuapp.com/, and we were awarded Advanced Level of Achievement for our project.

**NUS Grading Scale**:

A+ & A (5.0); A- (4.5); B+ (4.0); B (3.5); B- (3.0); C+ (2.5); C (2.0); D+ (1.5); D (1.0); F (0)

S = Satisfactory; U = Unsatisfactory

CS = Completed Satisfactorily; CU = Completed Unsatisfactorily

EXE = Exempted; IC = Incomplete; IP = In Progress; W = Withdrawn

# Work Testimonial

To whom it may concern,

It's my great pleasure to recommend Mr. Nguyen Van Binh for the overseas college program in NUS. I was the mentor of Binh when he worked as a machine learning engineer intern in Neuron Mobility. Neuron Mobility is a Singapore-based company manufacturing and operating shared electric scooters in Australia, New Zealand, UK and Canada.

During Binh's three month internship, he was mainly involved in the parking photo classification project, which aims to identify and rectify bad parking behaviour based on the photo taken by the users. Binh's main responsibilities in the project include: 1) cleaning and preparation of the raw image data for annotation; 2) computer vision model training with the images and annotations; 3) threshold tuning based on the business requirements; 4) construction of the annotation platform. Thanks to Binh's hard and excellent work, we were able to roll out a model in our app with only a 2% error rate on the false positives of the bad parking detection results. This model will save,at least US$ 200,000 annually in the future, and probably greatly reduces the bad parking behaviours in the cities.

I was fairly impressed by Binh's technical capability in the internship. He's always finished the assigned tasks very quickly and accurately. In occurrence of problems or bugs, he could find and correct them in a very efficient manner. This made it possible for him to finish such a big project in three months only.

Binh's working altitude is also very impressive. The annotation platform, for example, was not in our original plan. But when Binh found the limitations of the third-party annotation platform, he actively took the job of building our in-house annotation platform. This new platform not only helps with the current project, but also generates more value for the whole machine learning team in Neuron Mobility in the future.

I also found Binh is very good at communication. He's capable of explaining things clearly and concisely. During the internship, he's made a very good relationship with his teammates. For example, he joined the regular jogging activity in the company and hung out with other colleagues well.

I believe Binh's the right person for the overseas college program in your university, if you're looking for some talented young people with passion, capability and ambitions. I therefore strongly recommend him.

Sincerely,

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