

# Dan Huy NGUYEN

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## EDUCATION

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### University of New South Wales

Feb 2018 – April 2024

*Bachelor of Engineering (Hons) (Mechatronics) / Bachelor of Science (Computer Science)*

- Graduated 1st class with total weighted average mark of 82.622.

### Patrician Brothers' College Fairfield

Oct 2017

*Higher School Certificate*

- ATAR of 94.25.
- Subjects: Extension 2 Mathematics, Extension 1 Mathematics, Chemistry, Physics, English Advanced.

## WORK EXPERIENCE

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### Accenture

*Application Development Analyst*

May 2024 – Current

- Configuring and testing CRM in public sector with Salesforce and Azure DevOps.

### UNSW

*Casual Academic*

Sep 2021 – Current

- Involved in planning course curriculum and content from assessments to lectures for C++ and robotics courses across all year levels.
- Taught and mentored classes, ran help sessions, and marking for engineering design, robotics, and C++ courses.
- Lead migration for delivery of course content using GitHub Classrooms.
- Optimise processes using scripting, build tools, CI/CD tools.
- List of courses taught for: DESN1000, DESN2000, MTRN2500, MTRN3100, MTRN4110, COMP9024.
- List of courses administrated for: MTRN2500, MTRN3100, MTRN4231.

### Sperospace

*Mechanical Engineering Intern*

Jul 2021 – Oct 2021

- Conceptual design of end effector (technology readiness level 3) for use in space applications using engineering concept design tools.

## PROJECT EXPERIENCE

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### Social Media App

August 2024 – Current

*Fullstack Developer*

- Designed social media mobile app that is cross between popular Dress To Impress Roblox game and BeReal.
- Implemented with Flutter + Firebase (Functions, Firestore, Storage, Authentication, AppCheck), Google & Apple social authentication, and custom camera and gallery picker.

### TV Mate

May 2024 – June 2024

*Application Developer*

- Designed and implemented Flutter MacOS and iOS app with mDNS-enabled IR-firing IoT devices (ESP8266) for remote control of multiple TVs via websockets over LAN.

### Split Payment App

Sep 2023 – Current

*Application Developer*

- Solely prototyping multiplayer split-payment app with fractional splitting enabled by multi-range sliders and OCR for receipt-digitisation.

- Built with Firebase, Firestore, React, Mantine UI, Tabler, immer, react-slider, tesseract.js, wouter, zustand, Vite, Vitest.

## Sumobots

*Sumoltaneous Equations*

**May 2022 – July 2022**

- Organised team and delegated WBS (waterfall) to deliver 1<sup>st</sup> place winning sumobot in MTRNSoc x CREATE Sumobots Competition Advanced Stream.
- Participated in concept generation of solution and requirements.
- Soldered and assembled electrical system.
- Architected robot software design and control loop.

## UNSW Competitive Robotics Group

*Robotics Student Engineer*

**Sep 2021 – June 2022**

- Created ROS control, description, and gazebo packages for end effector and combined UAV/end effector robots.
- Modelled CAD artefacts with URDF/Xacro/SDF for Gazebo simulation.
- Assisting project management with MS Teams management and WBS development.

## Offworld Robotics

*Project Manager*

**Dec 2020 – June 2022**

- Supervised leadership team to conduct operations with respect to project management plan and systems engineering management plan.
- Centralisation and refinement of processes, structures, documentation, and workflows onto GitLab to improve organisational efficiency and standardise quality.
- Developed learning curriculum covering design and implementation of robotic systems for upskilling of Off-world Robotics students.

*Mechanical & Manufacturing Student Engineer*

**Jan 2020 – Dec 2020**

- Designed ladder-frame chassis, bogie suspension, and limited-slip differential with hybrid agile-waterfall design process for rapid iteration and 3D-printing manufacturing.
- Simulated and optimised parts in various loading conditions with FEA.
- Invented unique differential as proof-of-concept of kinematic mechanisms for integration with bogie suspension.

## COMPETITION EXPERIENCE

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### Accenture Technology Bootcamp

**Feb 2022**

- Developed proof-of-concept "GitLab Team Management" application in Django/Python connecting to GitLab API to enhance people management capabilities.

### WIESoc x IBM Hackathon

**Oct 2020**

- Developed prize-winning "COVID Safe Link" website in Flask/Python connecting to Google Maps API and NSW Open Data Platforms to plan safe travel through populated areas and public transport.

### WIESoc x Aurecon Design Challenge

**Sep 2019**

- Conceptualised an innovative solution to assist unconfident and learning drivers in adapting to high-speed lane mergers and intersection turns.

## VOLUNTEER EXPERIENCE

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### CSESoc Peer Mentoring

*Peer Mentor*

**Feb 2022 – May 2022**

- Assist students transition into university life with degree plan strategy.
- Help students setup development environments e.g. SSH, VSCode, and C build tools.

### Engineering World Health Summer Institute

- Trained in student volunteer program in Cambodia with acquired skills in soldering, mechanical and electrical repairs of biomedical equipment.
- Repaired and returned to service twenty-seven hospital equipment in four-week rural hospital placement.
- Built AC-to-DC rectifier to extensively test electrical circuits of biomedical equipment.

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## ACADEMIC PROJECTS

**MMAN4010/4020 – Thesis A/B****May 2023 – Dec 2023**

- Lead team of students to build proof-of-concept website for real client to achieve course marks of 95 and 89.
- Architected system which was website integrated with mechatronic system to automate control of multiple TVs using websockets over WiFi.

**COMP6080 – Web Front-End Programming****May 2023 – Dec 2023**

- Built frontend Airbnb clone (using React, Mantine, SWR, Axios, Wouter, Zustand) given backend API to achieve course mark of 90.
- Built frontend web messaging platform (in pure vanilla JS, HTML, CSS, and Bootstrap) given backend API and using Web APIs like HTML DOM, Intersection Observer, and Navigation.

**COMP3900 – Computer Science Project****Feb 2022 – May 2022**

- Revamped "GitLab Team Management" Django project with full-stack boilerplate and upskilled team on Django framework.
- Implemented SSO with GitLab web service using django-oidc, GitLab API calls on top of requests library, text search with django-haystack, and object-level permissions with django-rules.

**MTRN4110 – Robot Design****May 2021 – Sep 2021**

- Architected robot software for maze-solving robot with autonomous navigation using world imaging data processed with OpenCV.
- Hacked Webots build platform to simultaneously execute C++ and Python programs with Cython interface.

**MTRN3500 – Computing Applications in Mechatronics Systems****May 2020 – Sep 2020**

- Developed multi-process application for LiDAR and GNSS processing, and teleoperation of robot using shared memory IPC.
- Built TCP/IP client with WinSock2 to connect to robot over WiFi.
- Implemented GUI to visualise robot data processing and motion using OpenGL.

**COMP1531 – Software Engineering Fundamentals****Feb 2020 – May 2020**

- Developed back-end and API in Flask/Python for Slack-like application achieving project mark of 97.

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## ACHIEVEMENTS

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| • UNSW Dean's Honours List.                              | <b>2021</b> |
| • UNSW Dean's Honours List.                              | <b>2020</b> |
| • UNSW Dean's Honours List.                              | <b>2019</b> |
| • New Colombo Plan Scholarship Recipient.                | <b>2018</b> |
| • RACI NSW Schools Titration Competition – Silver Award. | <b>2017</b> |
| • Corporal of Australian Army Cadets.                    | <b>2016</b> |

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## TECHNICAL SKILLS

**Robotics development**

- ROS1/2, RViz, Gazebo.
- Webots.
- URDF, SDF.
- Low-level C/C++14.
- C++20 (Catch2, GoogleTest, doctest, GoogleBench-

mark, CxxTest).

- Assembly (MIPS).
- MATLAB (Simulink).

**Full Stack App Development**

- HTML, CSS, JS, TS.

- React.
- PostgreSQL, PL/pgSQL.
- Firebase (Authentication, Functions, Hosting, Firestore, Storage).
- Flutter.
- AWS (Amplify, EC2, S3).
- Nginx.

#### Other Programming Languages

- Python <=3.9 (Jupyter, OpenCV).
- Java 17 (OOP, design patterns).

#### Software Tools

- git.
- GitHub (Actions, Classroom).
- GitLab.
- VSCode, Visual Studio.
- WSL, Ubuntu, Debian, Windows 10, Mac.
- Docker.

#### Engineering Skills

- Design thinking.
- Concept generation & evaluation.
- Prototyping.
- Project planning & management.

#### Mechanical & Manufacturing

- 3D CAD (Solidworks, Autodesk Inventor Professional, Fusion360).
- Manual metal machining (Lathe, Mill).
- 3D-printing.
- Laser cutting (Trotec).
- Water jet cutting (ProtoMAX).

#### Office

- Microsoft Office (Outlook, Word, Excel, PowerPoint, Teams, SharePoint, Planner, Forms).
- L<sup>A</sup>T<sub>E</sub>X, ConT<sub>E</sub>Xt.
- Markdown (Mermaid, GitLab Flavoured).

#### CERTIFICATIONS

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**Salesforce Platform App Builder**

**July 2024**

**TAFE Statement in UNSW Engineering Mechanical**

**Nov 2019**

- Use Hand Tools.
- Use Workshop Machines for Basic Operation.