

# 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)*

- Cumulative WAM of 82.622.
- Notable courses: DESN2000(99), ENGG3600 (94), MATH2019 (93).

## WORK EXPERIENCE

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### 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.

## PROJECT EXPERIENCE

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### TV Mate

May 2024 – June 2024

*Application Developer*

- Designed and implemented a Flutter 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.

### 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.

## 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.

## ACADEMIC PROJECTS

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### COMP6080 – Web Front-End Programming

May 2023 – Dec 2023

- Built frontend Airbnb clone (using React, Mantine, SWR, Axios, Wouter, Zustand) given a backend API to achieve course mark of 90.
- Built frontend web messaging platform (in pure vanilla JS, HTML, and CSS) given a 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 the robot software for a 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 a 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.

## ACHIEVEMENTS

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- UNSW Dean's Honours List. **2021**
- UNSW Dean's Honours List. **2020**
- UNSW Dean's Honours List. **2019**
- New Colombo Plan Scholarship Recipient. **2018**

## TECHNICAL SKILLS

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### Robotics development

- ROS1/2, RViz, Gazebo.
- Webots.
- URDF, SDF.
- Low-level C/C++14.
- C++20 (Catch2, GoogleTest, doctest, GoogleBenchmark, CxxTest).
- Assembly (MIPS).
- MATLAB (Simulink).

### Full Stack App Development

- HTML, CSS, JS, TS.
- React (Mantine UI, Chakra UI, React Hook Form, React Query, SWR, Wouter, Zustand).
- PostgreSQL, PL/pgSQL.
- Firebase (Hosting, Firestore).
- Flutter (Provider, Bonsoir).

### 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.