Dan Huy Nguyen

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Education

University of New South Wales **Feb 2018 – Dec 2023**

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

- Cumulative WAM of 81.758.
- Notable courses: DESN2000(99), ENGG3600 (94), MATH2019 (93).

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

UNSW

Casual Academic **Sep 2021 – Current**

- Lab demonstrator for first-year to post-graduate engineering courses (DESN1000, MTRN2500, MTRN3100, MTRN4110, COMP9024) with an average satisfaction rate of 95%.
- Course planner for robotics courses (MTRN2500, MTRN3100, MTRN4231) involving curriculum development and creation of teaching content for labs and assessments.
- Utilised modern tools to efficiently develop and deliver content to students e.g. Make, GitHub Actions, GitHub Classrooms, and custom sandboxed C++ autotester.

Sperospace

Mechanical Engineering Intern **Jul 2021 – Oct 2021**

- Generation and evaluation of end effector concepts using brainstorming, pair-wise comparison charts, and best-of-class matrices.
- Designed end effector rated for technology readiness level 3 for use in space applications.

Project Experience

Sumobots

Sumoltaneous Equations **May 2022 – July 2022**

- Organised team to deliver 1st place winning sumobot in MTRNSoc x CREATE Sumobots Competition Advanced Stream.
- Developed and delegated work breakdown structure using waterfall engineering method.
- Participated in concept generation of solution and requirements.
- Soldered and assembled electrical system.
- Implemented robot software architecture 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**

- Supervision of a 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.
- Development of a learning curriculum covering design and implementation of robotic systems for upskilling of Offworld Robotics students.

Mechanical & Manufacturing Student Engineer **Jan 2020 – Dec 2020**

- Designed ladder-frame chassis, bogie suspension, and limited-slip differential under a 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.

Extracurricular

CSESoc Peer Mentoring

Peer Mentor **Feb 2022 – May 2022**

- Assisted student transition into university life and strategising their degree plan.
- Help students setup development environments utilising SSH, VSCode, and C build tools.

Competition Experience

Accenture Technology Bootcamp **Feb 2022**

- Developed a 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

Engineering World Health Summer Institute

Biomedical Equipment Technician **Dec 2018 – Feb 2019**

- 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.

Academic Projects

COMP6080 – Web Front-End Programming **Feb 2023 – Mar 2023**

- Designed a React-inspired architectural model in Vanilla JS for a job seeker website.

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 simultaenously 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.
- Designed 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 a Slack-like application achieving a project mark of 97.

Achievements

- UNSW Dean's Honours List. **2021**
- UNSW Dean's Honours List. **2020**
- UNSW Dean's Honours List. **2019**
- New Colombo Plan Scholarship Recipient. **2018**
- RACI NSW Schools Titration Competition – Silver Award. **2017**
- Corporal of Australian Army Cadets. **2016**

Technical Skills

Robotics

- ROS, RViz, Gazebo.
- Webots.
- URDF, SDF.

Software Development

- C++20 (Catch2, GoogleTest, doctest, GoogleBenchmark).
- Python.
- HTML, CSS, Javascript
- MATLAB (Simulink).
- Assembly (MIPS).
- git (GitHub, GitLab).
- GitHub Actions
- VSCode, Visual Studio.
- WSL, Ubuntu, Debian, Windows 10.

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).
- GitLab.
- LaTeX, ConTeXt.
- Markdown (Mermaid, GitLab Flavoured).

Certifications

Coursera | Google – Foundations of Project Management **Oct 2021**

TAFE Statement in UNSW Engineering Mechanical **Nov 2019**

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