Curriculum Vitae

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Henry Jian Chen

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Professional Summary

I'm a UWA Electrical Engineering and Management Student with skills in machine learning, web development & IT management and mechatronic design. I currently hold a casual position at Vital Trace as an Undergraduate Electronics Engineer. I also work with Engineers Without Borders and UWA Motorsports and as a Project Manager and Electrical Engineer. I was previously involved with INPEX as an Instrumentations & Controls Engineer and The Noisy Guts Project as a Data Scientist and Biomedical Engineer.

Technical Skills and Achievements

Electronics Design and IoT Integration

- Specializing in STM32 Development, Low Voltage Power Distribution and Analog Design and Realtime UI's
- Developing a Test Cell, Prototype Legplate and Configurable Legplate for my work at Vitaltrace
- Designed a High Current Power Distribution Module onboard our EV at UWA Motorsports
- Developed a Solar Lead-Acid Battery onboard a hobbyist Experimental Aircraft
- Worked with STM32 MCU's, Altium, KiCAD, Solidworks and Fusion 360.
- Heavily involved with Research and Development in a MedTech startup - designing, building and testing custom embedded electronics with the aims of detecting lactic acid within the interstitial fluid of a baby's scalp. I specialize in analog design, Digital Signal Processing and Embedded RF design.
- Designed a High Current Power distribution board manager used to power low voltage systems onboard our EV at UWA Motorsports.
- Developed a Solar Lead-Acid Battery Charger board for use on a hobbyist experimental aircraft.
- Currently Designing a "Grammy Tracker" to track people with Alzheimer's with GPS and transmitting data through an LTE connection.
- Built a camera stabilizer that streamed its control variables to a simulated web server and displayed it on a real-time web frontend in high school.

Full Stack Web Development, App Development & IT Management

- Worked with technologies including Electron, Flutter, React, Express, Socket.IO and Docker for 5 years – building full-stack web and mobile apps.
- Built internal tooling for web and desktop purposes in Vital Trace for data visualization, inventory and experiments - Primarily worked with high-performance real-time systems hosted on remote servers.
- Designed a data-collection app for The Noisy Guts Project to help diagnose IBS.
- Built a GPS and Accelerometer Tracking System for Remote Monitoring and Feasibility Testing.
- Built, Deployed and Managed UWA's University Engineers' Club's.
- Worked in Austin Computers as sales and tech support for retail and corporate clients - built computers, servers and performed computer repairs.

Machine Learning

- Worked with Python for four years – cleaning raw data, finding features and building models for classification and regression and natural language processing.
- Designed and tested a sensor drift detection algorithm using different machine learning methods for INPEX to use for conditional monitoring on a sensor.
- Engineered features from a sparse dataset and applied the abstracted signal to successfully find relationships with other parts of our dataset in the Noisy Guts Project.
- Applied data-cleaning and data visualization techniques for dataset feasibility testing.

Oil and Gas Functional Safety - Safety Instrumented Functions (SIF)

- Audited and Ensured that Safety Instrumented Functions were Being Tested On-Time
- Developed Maintenance Work instructions to ensure proper testing is carried out on our SIFs.
- Developed Software Changes for INPEX's CPF and FPSO Facilities safety systems.

Work Experience

Vital Trace: Undergraduate Electronics Engineer (Mar 2021 - Present)

- **Responsibilities:** Embedded Systems and Electrochemistry Research and Development (RnD), EE Team Lead and Project Management for a MedTech startup.
- **Achievements:** Successfully led and delivered the SuperDAQ Project - A device used to test 5 parallel potentiostat devices.
- Built a desktop application for our Data Acquisition Systems (DAQ) - ensured the system would stream data from a bandwidth serial output without any noticeable lag to the user.
- Designed, built and tested a Lithium-Ion Battery Pack for SuperDAQ - Ensured that the pack would fail safely on all identified failure cases, designed mechanical housing for the pack and interfaced with a contractor to secure the pack to our device.
- Interfaced and managed deliverables from our external contractor during the delivery of SuperDAQ.
- Reverse engineered potentiostats to identify ideal filter configurations and to inform our legplate designs
- Currently designing a custom leg plate based on our experimental findings, prototypes and academic papers.

INPEX: Instrument and Controls Vacation Student (Nov 2020 - Feb 2020)

- **Responsibilities:** Perform a gap analysis between document revisions and ensure that we were proof testing safety instrumented functions on time.
- **Achievements:** Performed full analysis for our CPF and FPSO Facilities and identified ¿ 40 errors present on our currently assigned work orders.
- Replaced Inspection and Full Function Tests for non-SIS related instruments to ensure we are proof testing more efficiently
- Optimised Proof Testing frequency to reduce resource requirement to remain in compliance. Identified 70% of SIFs were over-maintained.

UWA Motorsports: EE Team Member (Aug 2019 - Present)

- **Responsibilities**: Research and develop solutions to an electric vehicle's electrical systems such as the vehicle charging, powertrain and safety whilst also using Altium to design custom PCB's for various parts of the car
- **Achievements**: Successfully designed and built an accumulator temperature sensor for battery safety testing and benchmarking
- My team and I successfully built the car charger by designing a system that changes 3 Phase power into 400V/40A DC
- Designed and built a discharge rig to safely dissipate 32MJ of energy from our car accumulator in 30-45 min.

Engineers Without Borders: Project Lead (Feb 2019 - Present)

- **Responsibilities**: I am currently the Project Lead for UWA's Engineer's Without Borders' Technical Design Team (App Tech). We are currently underway with an autonomous gardening and farming R&D Project - with the aims of bringing a suite of Dev Centred IoT Products to market by the end of the year.
- **Achievements**: Led a team of 5 electrical/software engineering students to create a data logging module for remote use in Cambodia.
- Wrote the original code for the App - created for the team as a baseline version of the app.
- We completed and shipped a completed app in January 2020

Other Roles

Noisy Guts (Data Science and App Developer) *Altronics Balcatta* (Sales Assistant), *Austin Computers* (Sales Assistant), *University Engineers's Club* (Webmaster/Web Development)

Education

University of Western Australia (Feb 2019 - Present)

- Awarded $25,000 Scholarship from UWA Engineering
- BSc: Electrical Engineering & Management
- Master of Professional Engineering Assured Pathway

Hale School (Feb 2007 - Dec 2018)

- 98.15 ATAR: Engineering Studies, Math Specialist, Maths Methods, Chemistry, Physics, English
- WACE Subject Certificate of Excellence in Engineering Studies - (One of the Top Two in the State)
- WACE Subject Certificate of Distinction