SAMUEL REEDY

Graduate Mechatronics Engineer

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PERSONAL STATEMENT

As a graduate Mechatronics Engineer, my passion is the integration of diverse engineering disciplines. My strengths lie in quick learning, innovative problem-solving, and a deep commitment to exciting projects, as showcased by my unique soft robotics design during my university studies. I excel in, software, mechanical, and robotics fields and am enthusiastic about contributing to a team where I can be actively involved in all aspects of design. My goal is to immerse myself in various facets of engineering, applying my creative ideas and skills to bring integrated solutions to life.

EXPERIENCE

Engineer

Revive Our Gulf

07/2024 - Present Auckland, New Zealand

- Collaborated on the development of an underwater detection system for the BlueROV2, aimed at identifying invasive seaweed (Caulerpa).
- Restructured prototype software for enhanced maintainability and performance using JavaScript, HTML, CSS, and Python with Tornado.
- Designed and implemented a visual user gauge to assist the pilot in estimating depth from the sea floor using a Doppler Velocity Log module.
- Created a custom driver circuit to interface between the camera's FSTROBE output and a strobe power supply, utilising LTSpice for component selection and performance analysis.
- Modified the Raspberry Pi kernel to achieve microsecond control for the strobe system, maintaining precision within 20 µs (2%) of the desired strobe length.
- Developed functionality to read GPS data from the BlueROV2, enabling accurate GPX trails for improved navigation and data logging.

Mechatronics Engineer

Maui63

04/2024 - 07/2024 Auckland, New Zealand

- Contributed to the design and development of a drone-mounted system for the Jetson Orin NX, focussing on long-range communication, camera integration, and real-time data processing for a detect-and-avoid solution.
- Designed and 3D-printed a custom lightweight drone mount for the Jetson Orin NX, integrating a long-range DLB module for communication over distances up to 10 km.
- Assisted in selecting and testing camera and lens combinations, ensuring compatibility with the Jetson Orin NX for optimal detection performance and image quality.
- Developed custom GStreamer pipelines for real-time video transmission, enabling efficient multi-camera streaming with less than 30% resource consumption and overhead on the drone's processing system.

Mechatronics Intern

Hydracel Technology Limited

11/2022 - 05/2023 Auckland, New Zealand

- Developed a Cool Thermal Energy Storage (CTES) system, leveraging water's latent heat of fusion for solar energy storage.
- This included design in Autodesk Inventor for production feasibility and small scale prototypes to validate design concepts.
- Enhanced CTES system efficiency by 250% through advanced technical analysis using MATLAB and Ansys CFX.
- Authored and filed patent documents for the CTES solution, including detailed technical drawings and specifications.
- Designed and built a custom data logger and controller to ensure accurate monitoring of the prototypes and to allow for a user interface to control pumps, check temperatures, and recording testing sessions.

Mechatronics Intern

Sealegs

11/2021 - 03/2022 Auckland, New Zealand

- Led the design and construction of an autonomous system for a small, unmanned surface vehicle (USV).
- Innovated the power system by integrating solar technology, extending operating time by 20 hours and minimising environmental impact.
- Collaborated with multidisciplinary teams to seamlessly integrate the autonomous system into the USV, ensuring cohesive functionality.
- Conducted comprehensive testing, both in lab and field environments, to verify system performance and reliability.
- Utilised Ansys CFX alongside Autodesk Inventor for custom keel modelling and fluid performance analysis, leading to 20% efficiency improvements based on analytical findings.

EXPERIENCE

Design Intern

Voltatic Jet Systems

06/2020 - 08/2020 Auckland, New Zealand

- Led the design of the handheld controller for the company's jet board, which involved performing anthropomorphic analysis and integrating electronics systems into a compact and waterproof design
- 3D printed and iterated multiple versions of the controller using Autodesk Inventor, ensuring efficient ergonomics and optimal functionality
- Worked under an agile development cycle to meet project deadlines and adapt to evolving design requirements
- Worked closely with engineers, designers, and project managers to ensure efficient collaboration and integration of design solutions within the product development process

EDUCATION

Bachelor of Engineering (Honours), Specialisation in Mechatronics

University of Auckland

03/2020 - 11/2023

GPA
8.5 / 9.0

TECHNICAL SKILLS

C C# C++ Python Verilog ANSYS CFX Autodesk Inventor Autodesk Fusion 360 Matlab Unity 3D printing Soldering

PERSONAL SKILLS

Problem solver

At Hydracel my role revolved around developing solutions in order to get small-scale prototypes working. Facing complications in compressor designs, required me to come up with out-of the box solutions.

Fast learner

During a previous Game Jam, a 48-hour-long competition to make a full game, I had to learn a new render pipeline in the short timeframe in order to fix a series of issues my team was facing.

Teamwork

I worked alongside engineers from several disciplines to successfully create and develop a small autonomous boat at Sealegs. Maintaining consistent communication and detailing.

KEY ACHIEVEMENTS

Senior Scholar Award

2024 - For achieving the highest overall grades in my Degree.

Part IV Projects Award of CROWN Robotics Technology Center

2023 - For my Research Project: A convolution neural network that extracts depth from images.

High-Achieving Student Award in International Assessments

2018 - Placed in the top ten students in the UAE for my aggregate score in English, Mathematics and Science in the international PISA examinations. (2018)

Dean's List

2020/2021/2022

First in Class MECHENG 201

2022 - For achieving the highest overall grade in "Introduction to Mechatronics".

First in Class MECHENG 754

2023 - For achieving the highest overall grade in "Industry 4.0 Smart Manufacturing".

REFERENCES

AVALIABLE ON REQUEST