

ALI ASHRAFY

Port Macquarie, NSW

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🐙 github.com/alislaboratory

Education

St Columba Anglican School

Year 11 Student

2021 – 2024

Port Macquarie, 2444

Overview

I love learning about all fields of STEM, especially programming and mathematics. In my off time, I enjoy playing tennis, going to the beach, and travelling. I also like to try new things and treat challenges as stepping stones to improvement.

Academics

Accelerated HSC Software Design and Development

2023

- Ranked 1st in Year 12 Software Design and Development class whilst accelerated.
- Achieved 98/100 (1st) in my trial HSC examination.

SCAS STEAM Excellence Award

2022

- Won the all-round Science, Technology, Engineering, Arts and Mathematics Excellence award of my school.

SCAS Academic Awards

2021

- Achieved 1st in subject for Information and Software Technology and Applied Mathematics at SCAS.

Experiences

Iona Fusion Robotics Team

2021 – Present

Team Captain, Lead Programmer

- Led our team to 2nd place in 2023 in Asia-Pacific FIRST Robotics Competition Championships in Wollongong.
- Industry-level work with advanced C++ OOP and computer vision, including work with 3D robot localisation and auto-targeting using OpenCV and custom algorithms.

Freelance Programming

Feb 2022 – Dec 2022

Full-Stack Software Developer

- Delivered dozens of orders to happy customers on Fiverr, using Python, C++, PHP, JS, and SQL.

Charles Sturt University Shark Tank

April 2022 – Dec 2022

Group Leader

- Achieved 3rd place out of over 200 teams in the national CSU Shark Tank Entrepreneurial program with our Project Litterbug; an autonomous boat designed to remove waste from local rivers and estuaries.

Da Vinci Decathlon (2023) Our team achieved 2nd place out of over 30 teams in the regional 2023 Da Vinci Decathlon.

Interschool Chess Challenge (2023) Selected for and participated in an invitational chess tournament with schools from all over NSW.

Grok NCSS Advanced (2023) Achieved 150 score (merit) in the Advanced stream of the NCSS challenge.

Rotary Public Speaking (2023) Gave an informed speech regarding the societal construct of trust at the Port Macquarie Rotary Club.

Legacy Public Speaking Competition (2023) Won a competition and became regional finalist of the NSW Government Legacy Public Speaking tournament.

Runfest Design Competition (2023) Participated in the Port Macquarie RunFest medal design competition.

Grok Challenges (2021,2022) High distinction in 2021 Intermediate NCSS challenge, participation in Grok Cybercomp and Webcomp.

Australian Informatics Olympiad (2023) Recently participated in the AIO.

UNSW ProgComp(2021,2023) Achieved a credit solo in the UNSW ProgComp cupcake challenge.

Oxford University Computing Challenge (2023) Achieved merit in the OUCC.

Australian Maths Trust Computational and Algorithmic Thinking Test (2023) Participated and achieved credit in the competition.

CASE Space School(2023) Attended a space camp where I travelled to the U.S for 2 weeks and met many new people and had a wonderful time.

NCSS (2023) Attended the selective National Computer Science School by Grok Academy at the University of Melbourne. I learnt many new things about programming and group work and met many like-minded people.

Projects

Custom-Designed CPU | *Logisim*

May – August 2023

- Created a Central Processing Unit called the Mk1 completely from scratch, using nothing but core logic gates. All aspects were designed myself only with boolean algebra and with minor help from a book called 'The Elements of Computing Systems'
- Utilised a logic circuit simulator called Logisim Evolution.
- Created a 16 instruction custom Turing-complete 4-bit architecture with an Arithmetic and Logic Unit, Control Unit and custom memory with custom designed registers.
- Created basic programs out of my own assembler language that is processed by the Mk1, like while loops, multiplication and displaying small images to dot-matrix displays.

Breadboard Computer | *Electrons*

July 2023

- Creating a simple 4-bit breadboard computer using logic ICs.
- Learnt how to use analog oscilloscopes for signal analysis and troubleshooting.
- Created a Python program to parse my Logisim designs and convert them into circuit schematics.

Neural Cellular Automata Engine | *Javascript, HTML, CSS*

June 2023

- Created a cellular automata engine with activation functions and field maps that describe the behaviour of the patterns created.
- Used OOP to create classes and used syntactical analysis to determine if an activation function is executable and if any false statements like self-referencing statements exist.

More projects can be found at my GitHub: github.com/alislaboratory