Insaf Imran

Electrical and Computer System Engineering (Honors) and Masters of Engineering Student

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PROFILE

Aspiring Electrical and Computer Systems Engineer 3rd year student at Monash University with hands-on experience in designing and prototyping innovative systems for real-world applications. Proficient in CAD modelling, Finite Element Analysis, embedded systems, and sustainability-driven engineering solutions. Collaborative team player with a proven track record in competition-level projects and technical problem-solving.

PROJECTS AND EXPERIENCE

Engineering Projects

Aquarium Water Level Monitoring System

- Built using Arduino Uno, various sensors, LEDs, capacitors, and other electrical components.
- Designed a real-time system with alarms and capacitor-based backup for uninterrupted operation.
- Addressed integration issues and optimised reliability through debugging.
- Improved water monitoring accuracy by integrating sensor-based alarms and reducing water wastage.
- **Skills:** Embedded systems programming, hardware-software integration, python programming

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Sustainable Water Tank Design

- Integrated eco-friendly materials and Yirrganydji cultural elements.
- Developed solar-powered compartments for marine specimens, modelled in SolidWorks.
- Balanced cost and durability while meeting cultural and environmental goals.
- Enhanced sustainability by using locally sourced materials to minimise environmental impact.
- **Skills:** Sustainability-driven engineering, CAD modelling, cultural integration.

Power Supply Module

- Engineered a power supply delivering 3–3.6V output at 3–140mA, achieving <1% voltage ripple.
- Prototyped circuits using LM317 regulator, diodes, and capacitors.
- Verified performance with oscilloscopes, ensuring stability and safety.
- Improved power efficiency by minimising voltage ripple for reliable operation.
- **Skills:** Circuit design, prototyping, system debugging, C programming

Audio Synthesis Circuit

- Designed an audio pipeline with electret microphones, op-amps (TL974), STM32 DSP, and LM386 amplifiers.
- Enhanced audio clarity through LTspice simulations and oscilloscope testing.
- Improved audio signal fidelity by fine-tuning filtering parameters and reducing distortion.
- **Skills:** Audio signal processing, circuit testing, embedded systems debugging

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Processor Design

- Implemented an x72 processor with Verilog HDL, featuring ALU, FSM, and branching logic.
- Conducted test benching and simulations using ModelSim and hardware testing with DE10 FPGA boards.
- Streamlined instruction execution by developing an efficient datapaths for improved processor performance.
- **Skills:** Digital logic design, FPGA testing, Verilog programming.

Engineering Monash Student Team- Monash Connected Autonomous Vehicles

https://monashcav.com/

Theseus 1: Steering System

- Led a two-person team to design, prototype, and test a steering system for an project Remotely Controlled Vehicle
- Utilised SolidWorks, Onshape, and Altium to optimise performance.
- Increased steering precision by designing lightweight and efficient components.
- **Skills:** Leadership, CAD modelling, prototyping.

Asterius Mk2: Suspension System

- Designed and built a critical suspension component ensuring a 1.7 safety factor for an Electric Self-Driving Automobile (ESDA).
- Collaborated with a more than 30-member team for the IGVC competition in Michigan.
- Conducted FEA stress tests and CAD modelling with SolidWorks and Onshape.
- Enhanced vehicle durability by optimising suspension geometry and reducing stress concentration.
- **Skills:** FEA, collaborative design, CAD, prototyping.

Academic

• Currently completing Engineering (Honours) and Masters of Engineering at Monash University specialising in Electrical and Computer Systems.

• Graduated 2022 with an ATAR of 93.50

SKILLS/ATTRIBUTES

Software

- SolidWorks
- Onshape
- Altium
- ModelSim
- Microsoft 365
- Adobe Creative Cloud

Programming

- Python
- C
- C++
- MATLAB
- Arduino IDE
- Verilog

Assembly Hardware Tools

- Various Electrical Tools
- 3D Printers
- Light Fabrication Tools
- TIG and MIG Welding

Engineering Expertise

- CAD Modelling
- Finite Element Analysis
- Circuit Design
- Problem Solving and Debugging
- Web Design

REFEREES

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