MICHAEL REED BASANGAN

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Expected Graduation: June 2026 | Citizenship: USA

ABOUT ME

I am a passionate and systems-focused software engineering student with a strong foundation in low-level C programming and embedded systems. I have developed real-time microcontroller projects using AVR C and am currently building STL-style containers in C++ to understand memory management and iterator design. I thrive in environments where I can work at the hardware-software boundary and am excited to grow into a Linux kernel engineering role. I aim to contribute to open-source systems like Ubuntu while developing deep kernel expertise within a globally distributed team.

EDUCATION

Bachelor of Engineering Science - BE, Software Engineering University of Technology Sydney

January 2024 - June 2026

GPA: 6.50/7.00

Notable Courses.

- Fundamentals of C: Received 92%, received a High Distinction.
- Database Fundamentals: Gained expertise in database design and management and received 92%.
- Systems Testing and Quality Management: Developed skills in software testing methodologies and quality assurance practices.

CLUBS & SOCIETIES.

- UTS Linux Club (Member)
- UTS Cyber Security Society (Committee Member)
- Programming Society (Member)
- UTS Surfing Club (Vice President)

<u>SKILLS</u>

• Languages & Frameworks:

C, C++, Python, Java, JavaScript, TypeScript, HTML/CSS, React, FastAPI

- Embedded & Systems Programming: AVR C, Interrupts, Timers, USART, ADC, ATmega328P, SPI, I2C
- Kernel Concepts: Bitwise operations, real-time constraints, STL-like data structure implementation, and iterator categories
- Tools & Platforms: Git, GitHub, VS Code, Docker, AWS (basic), Canva, Clerk, OpenAI API, SQL (PostgreSQL), Linux, VirtualBox
- Cybersecurity: CTF (SQLi, SSTI payloads), Kali Linux, Basic penetration testing
- Development Practices: Agile Methodologies, Unit Testing, CI/CD, Systems Testing & Quality Management
- Soft Skills:

Team Collaboration, Project Management, Remote Work, Public Speaking

PROJECTS

Embedded Traffic Light Simulation (AVR C) – Embedded Systems

- Implemented a fully functional traffic light system on the ATmega328P using AVR C with real-time constraints.
- Integrated interrupts, timers, USART, and ADC inputs, plus a sonar-based pedestrian alert system. Demonstrated low-level register control and modular embedded architecture.

Custom STL-Compatible HashSet (C++)

• Built a custom HashSet from scratch using std::list<int>::iterator for pointer safety and STL compatibility.

- Supported standard STL functions like std::find and std::remove, and implemented rehashing with iterator stability.
- Deepened understanding of iterator categories, memory control, and hash table internals.

Linux Packet Sniffer (C / libpcap) – In Progress

- Developing a low-level packet sniffer to monitor real-time network traffic using libpcap on Linux. Filters packets by protocol, extracts TCP/UDP metadata, and logs traffic to disk.
- Showcase's ability to work close to the kernel in userspace tools.

Smart Watering System (ESP32, C++) – In Progress

- Building a soil moisture-driven irrigation system using ESP32, ADC, and relay control.
- Samples sensors on a timed loop, performs threshold-based actuation, and explores low-power Wi-Fi telemetry.
- Demonstrates integration of analog data with embedded control logic.

CAN Bus Communication Framework (AVR / C) - In Progress

- Designing a lightweight CAN message parser to communicate sensor data between nodes using AVR + MCP2515 CAN transceivers.
- Enables real-time status exchange and actuator control across microcontrollers.
- Focuses on bit-level communication protocols, error handling, and timing synchronization.

EXPERIENCE

Committee Member – UTS Cyber Security Society

University Of Technology Sydney

- **Responsible for designing and publishing engaging social media content** to promote events and initiatives, using **Canva** for impactful visual communication.
- **Collaborate with fellow committee members** to plan outreach strategies, boosting online engagement and event turnout.
- **Contributed to building the club's online presence,** integrating design thinking into cybersecurity awareness content.

PASS Leader - Mathmatics

James Cook University

Selected by the professor for outstanding academic performance to lead Peer Assisted Study Sessions (PASS) in Mathematics.

- Led collaborative learning sessions for groups of up to 20 students, reinforcing complex mathematical concepts and strengthening their problem-solving abilities.
- **Conducted sessions** with up to 20 students, explaining complex mathematical concepts and reinforcing problem-solving techniques.
- **Developed learning strategies** that improved students' logical reasoning, critical thinking, and ability to tackle complex problems.

Vice President, UTS Surfing Club University Of Technology Sydney

- Planned and coordinated club events, ensuring successful execution by managing logistics, working with external vendors, maintaining safety protocols, and demonstrating strong project management and leadership skills.
- **Collaborated with club executives and members** to develop engaging events and initiatives, fostering a welcoming environment and enhancing overall member participation, highlighting team collaboration and communication abilities.
- Utilised digital tools to streamline event coordination, improve communication, and manage member engagement, applying problem-solving skills to enhance operational efficiency.

Treasurer

The FINstitute (James Cook University)

February 2023 - February 2024

• **Managed the financial operations** of a university club, demonstrating leadership, budget management, and analytical skills.

February 2023 - February 2024

October 2024-Present

November 2024-Present

• Secured AUD 2,500 in grants through research and proposal writing, highlighting strong attention to detail and project management.

Machine Technician

U.S. Coast Guard

March 2018 - April 2022

- Led a team of 8 in maintenance and repair projects, ensuring task delegation, crew safety, and efficiency.
- Completed 80+ search and rescue missions, providing first aid and saving 30+ lives.
- **Developed a comprehensive understanding of engine mechanics and vessel support systems,** enhancing maintenance efficiency and reliability.

HONORS & AWARDS

- JCU International Excellence Scholarship (July 2022)
- United States Coast Guard Commendation Medal (April 2022): Awarded for exceptional or distinguished service or achievement, demonstrating a level of performance that exceeds the standard expectations. This honour is given to individuals whose actions or services stand out significantly compared to their peers of similar rank or position.
- United States Coast Guard Achievement Medal (May 2022): The Achievement Medal is a U.S. military award created to honour exceptional performance or meritorious service by military personnel
- Certificate of Appreciation James Cook University (February 2023)