Amierul Hakeem

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EDUCATION

University of Manchester *July 2026*

MEng (Hons) Mechatronics Engineering | On track for First-Class Honours

- First year result: 86.2%, 3rd Best Overall Performance in the Year Group
- Second year result: 83.2%

Malay College Kuala Kangsar *May 2022*

International Baccalaureate Diploma

- 43 out of 45 points, 7 out of 7 in all Higher-Level subjects (Physics, Maths AA, English B)

Malaysian Public Service Department (JPA) *May 2022 - July 2026*

Recipient of JPA International Study Scholarship

PROJECTS

3rd Year Individual Project *Sept. 2024 - Present*

Formula Student Vehicle Control Unit (VCU) Development

- The project involves designing a custom STM32 F4 microcontroller based PCB using Altium Designer, adhering to the functional requirements of the team.
- Developing low-level firmware in C using STM32 HAL libraries, adhering to stringent safety regulations and functional specifications.

2nd Year Embedded Systems Project *Oct. 2023 - May 2024*

Autonomous Line Following Buggy

- Won the award of best embedded systems project by winning the final race against 50 other teams in the cohort and breaking last year's record time by over 10 seconds which was more than 20%.
- Developed Mbed C++ code using a state machine architecture with multiple external and timer interrupts which allows for a constant rapid 3 kHz sensor update rate for the system.
- Designed the buggy's CAD in SOLIDWORKS, optimising weight distribution to reduce rotational inertia allowing for accurate 90-degree turns at the maximum speed of 2 m/s.
- Implemented a digital 2-layer cascaded PID controller for precision movement control.

EXPERIENCE

Manchester Stinger Motorsports (Formula Student Team) *Oct. 2023 - Present*

Software Sub-team Leader | *June 2024 - Present*

- Leading a team of 7 students in the development of a range of software programmes from the low-level embedded firmware to the high-level software for data acquisition (DAQ).
- Implementing a Real-Time Operating System (RTOS) using FreeRTOS with CMSIS V2 interface for efficient multitasking on a single core microcontroller.

Auxiliary Electronics Sub-team Engineer | *Oct. 2023 - May 2024*

- Collaborated as part of a 100+ large student team, contributing to projects as a part of smaller sub-teams.
- Developed Brake System Plausibility Device (BSPD) PCB using Kicad comprising only analogue electronics, enhancing the knowledge of practical electronics.
- Acquired practical experience in developing a safety-critical device, working within strict requirements to ensure high reliability and prevent potential safety risks.

UK CanSat Competition *Oct. 2022 - May 2023*

Power Electronics and CAD Lead

- Cooperated with a diverse team of 4 student engineers from different academic backgrounds to design and build a compact can-shaped satellite.
- Developed a cost-effective two-stage parachute and landing leg deployment system, optimising limited space and weight constraints by utilising a single servo motor, thereby creating additional room for incorporating extra electronics and sensors into the CanSat.
- Enhanced problem-solving and project management skills through a long-term, systematic project.

Robosoc (Robotics Society) *Oct. 2022 - May 2024*

Hexapod Spyders Project | *Sept. 2023 - May 2024*

- Cooperated with a team of 5 students on developing a hexapod robot that utilised Robot Operating System (ROS) for the core functionality, enabling synchronisation with a 'mother' hexapod for coordinated movement.
- Engaged in comprehensive software and hardware integration, demonstrating proficiency in robotic systems.

Maze Solver Robot Project | *Sept. 2022 - May 2023*

- Collaborated in a team of 3 to create an autonomous buggy capable of solving a maze
- Improved understanding of using Arduino development boards and the fundamental principles of motor control with a feedback loop.
- Applied practical knowledge in electronics and programming, showcasing the ability to bridge theory with hands-on experience.

F1 In Schools Competition *April 2015 - Dec. 2017*

Design Engineer and Team Leader

- Led a dedicated team of 4 in manufacturing a miniature F1 car, gaining skills in project management
- Used SOLIDWORKS to design the car and run FEA and CFD simulations to optimise its performance.
- Utilised CNC Milling and 3D Printing for precise and efficient manufacturing processes.
- Two times “Fastest Car Award” winner and represented Malaysia in the World Finals 2017.

POSITIONS OF RESPONSIBILITY

Makerspace Society *June 2024 - Present*

Student Technician

- Supervised and mentored new students, conducting hands-on weekly workshops on electronics and 3D printing to inspire a passion for making.

The University of Manchester *June 2023 - June 2024*

Peer Assisted Study Sessions (PASS) Leader

- Facilitated academic support for a group of 30 peers as a PASS Leader, facilitating engaging weekly workshops and fostering a collaborative learning environment.

Hackchester (Cybersecurity Society) *Oct. 2022 - May 2023*

Student Developer

- Conducted weekly workshops with the goal of enhancing awareness and expertise in the field of cybersecurity and facilitated the development of the society’s website.

SKILLS

Programming

- Experienced in embedded software development in C/C++ with Mbed, STM32 HAL and Arduino.
- Used Python for quick scripting and data analysis with libraries such as NumPy and Matplotlib.
- Completed 3 online courses by Harvard University (CS50x, CS50p, CS50ai).

PCB Design

- Altium: Used for 3rd year project, learnt High Speed and Mixed Signal Design using Altium and completed Altium Academy Online course.
- Kicad: Used for Formula Student and personal projects.

3D CAD

- Most experienced with SOLIDWORKS, Onshape and Fusion360.
- Extensively used for prototyping with a personal 3D printer.

MATLAB and Simulink

- Used extensively in the degree course units such as control systems, signal and systems, mechatronics analysis and design, applied mechanics and industrial robotics.
- Completed Matlab Onramp and Simulink Onramp online course.

Linux Operating System

- Experienced in Linux-based software development and cybersecurity, including deploying a home NAS using a Debian-based OS, implemented ROS for the Spyders Project.