

Manan Dua

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RESEARCH PROFILE

Computer Engineering undergraduate at the University of Birmingham Dubai with hands-on experience in experimental aerospace systems, rocket avionics, embedded electronics, robotics and system integration. I design, build and test physical systems, with particular interest in autonomous aerospace systems, resilient navigation, onboard sensing, guidance and control, embedded autonomy, and flight experimentation. Seeking PhD opportunities where experimental autonomous aerospace systems, with an emphasis on onboard autonomy, sensing, navigation, guidance and control are developed.

RESEARCH INTERESTS

Experimental autonomous aerospace systems • Guidance, navigation & control (GNC) • Resilient / GPS-degraded navigation and sensor fusion • Embedded avionics, flight computers & real-time systems • Aerial robotics, autonomous vehicles & field robotics • Hardware-in-the-loop and flight-test experimentation

EDUCATION

University of Birmingham Dubai — BEng (Hons) Computer Engineering | 2024–2027

Year 2 (2025/26): 85.8% weighted average across 120 credits;

Richmond Global School — CBSE Class XII | 2023–2024

92%

RESEARCH & ENGINEERING PROJECTS

UOBRPL — University of Birmingham Rocket Propulsion Labs / *President, Team Captain & Electronics Co-lead* | 2025–Present

Lead a student aerospace engineering team developing high-power rockets, CanSat payloads and rover systems, coordinating electronics, avionics, fabrication, testing and competition readiness.

- Lead system-level integration across flight computers, telemetry, sensors, recovery electronics, composite structures and ground-station interfaces.
- Develop and validate engineering systems through design reviews, bench testing, fabrication, integration and field/competition testing.

MATCHA — High-Power Rocket & SUGAR — CanSat Payload / *Lead aerospace/avionics project* | 2025–26

- Designed and integrated a high-power rocket system targeting approximately 2 km altitude, including avionics architecture, flight computer integration, telemetry and recovery-related electronics.
- Developed SUGAR, a CanSat payload with onboard sensing, GPS, LoRa telemetry, data logging and recovery considerations; integrated an embedded sensor/communications stack for flight testing.
- Worked with carbon-fibre airframe components, composite fabrication constraints, CAD, OpenRocket simulation and real-world avionics integration under vibration, acceleration and power constraints.

INVICTUS-II — Mid-Power Rocket / *Rocketry / avionics engineering* | 2025–26

- Developed a Mid-power rocket for national rocketry competition, integrating structural, recovery and avionics requirements into a flight-ready system.
- Applied system engineering, CAD, flight simulation, electronics integration and test-driven iteration to prepare the vehicle for safe field operation.

NOVARIUM-II — Autonomous Rover / *Robotics / systems engineering* | 2025–26

- Designed and integrated a mobile rover platform combining mechanical structure, electronics and embedded control for autonomous/robotic operation.
- Worked across electronics, sensing and software integration, emphasizing practical debugging, subsystem interaction and physical validation.

Custom Rocket Flight Computer & Avionics / *Independent R&D* | 2025–Present

- Developing a custom embedded flight computer for rocket applications with IMU, barometric altitude sensing, telemetry/data logging and event-detection capabilities.
- Investigating sensor noise, drift, vibration, acceleration and electrical interference as practical constraints on reliable onboard state estimation and autonomous decisions.

Digital Spirit Level / Electronic Inclinator / *Independent engineering project* | 2024–25

- Built a sensor-based inclinometer using an STM-32 microcontroller; calibrated measurements and investigated noise, drift and repeatability in a real physical instrument.

PUBLICATIONS

Lead Author – “Passive Tape-Spring Landing Stabilization and Solar Deployment Dynamics for Atmospheric Micro-Probes: A Dual-Node Flight Architecture”

- IEEE SAIROB 2026 | Accepted for Oral Presentation (Best Paper Award Nominee).

Lead Author – “Mitigating Near-Field RF Desensitization in Miniaturized Satellite Payloads: A Deterministic TDM and Multi-Tier Avionics Architecture”

- IEEE ComNetSat 2026 | Manuscript submitted; under peer review.

RESEARCH / ENGINEERING EXPERIENCE

Engenius Lab — Engineering Project Trainee | 2025

- Assisted R&D for a drone flight computer, including circuit-architecture research, component selection, sensor bring-up, bench testing and documentation.
- Observed iterative laboratory workflows used to validate embedded hardware before productisation.

LEADERSHIP & COMPETITION ENGINEERING

UOB RPL — President, Team Captain & Electronics Co-lead | 2025–Present

MachX and UKSEDS — Best Innovation Award; team competition engineering and field-testing experience | 2024–26

TECHNICAL SKILLS

Embedded & Software: C, C++, Python, C#, STM32, ESP32, Raspberry Pi, Arduino

Electronics: Embedded electronics, sensor integration, PCB design, power electronics, telemetry, data logging

Design & Simulation: Fusion 360, SolidWorks, CATIA Magic, OpenRocket, RocketSim

Engineering: Systems engineering, avionics integration, rapid prototyping, fabrication, experimental testing

Communications: LoRa / RFM-series telemetry, GPS, IMU, barometric sensing, ground-station integration

SELECTED TRAINING

Robotics Automation & Engineering Robopack Workshop — Robotics, CAD, electronics, IoT concepts | 2024–25

Master C++ Programming — GeeksforGeeks — Data structures, algorithms, C++ programming | 2024–25

Programming & Problem-Solving — freeCodeCamp — Python and systems-level problem solving | 2024–25