ANEESH BORAVKE

adb1g24@soton.ac.uk | linkedin.com/in/aneeshboravke | aneesh.boravke.uk | Southampton, UK

PROFILE

Third-year MEng Aeronautics and Astronautics student at the University of Southampton, happiest where a design meets the real world: in the workshop, the wind tunnel or a flight test. Most interested in why predictions and test data differ. Seeking a 2027 Year in Industry placement in aerospace, defence or aviation.

EDUCATION

MEng Aeronautics and Astronautics (with Industrial Placement Year), University of Southampton **2024–2029**

- Graduating 2029, with the placement year in 2027–28. On track for a high 2:1 (Year 1: 73%).
- Year 3 (2026–27) modules: Aerothermodynamics, Advanced Aeronautics, Advanced Aerospace Mechanics and Control, Management and Law for Aerospace Engineers, Individual Project.
- Earlier modules: Structures, Materials Science, Aerodynamics, Propulsion, Thermodynamics, Aerospace Mechanics and Control, Digital Aerospace Design (computational fluid dynamics (CFD) and finite element methods).

The Skinners' School, Tunbridge Wells **Graduated 2024**

- A-levels: Mathematics (A), Physics (A), Chemistry (A), Further Mathematics (B).

WORK EXPERIENCE

Work Experience Placement, Leonardo UK, Yeovil **July 2022**

- Spent a week at Leonardo's Yeovil helicopter site, touring production (including the AW101 Merlin line) and systems engineering.
- Manufactured wiring looms and contributed to sustainable rotor blade development, gaining familiarity with production-line workflows and assembly tolerances.
- Saw how safety culture and quality standards shape day-to-day work in a regulated aerospace and defence environment, and delivered a group presentation at the end of the week proposing a new helicopter concept.

TECHNICAL SKILLS

- **Analysis and simulation:** finite element analysis (FEA) in ANSYS Mechanical / Workbench and SolidWorks Simulation (static, modal, vibration and hard-landing load cases), ANSYS Fluent (CFD), XFLR5 / XFOIL, OpenVSP, OpenRocket.
- **Design, structures and materials:** SolidWorks computer-aided design (CAD); stress analysis by hand calculation and finite element methods (bending, deflection, stress concentration); fatigue and fracture mechanics; materials selection (aluminium, steel, carbon fibre).
- **Hands-on testing and manufacturing:** wind tunnel testing (pressure, boundary-layer, lift and drag measurement); flight testing (Saab 340B); turning, milling, laser cutting, electrical soldering, motor maintenance; glass-fibre-reinforced polymer (GFRP) and epoxy composite layup; fused deposition modelling (FDM) 3D printing.
- **Coding and data analysis:** Python (NumPy, SciPy, Matplotlib) and MATLAB for engineering calculations, modelling and data analysis; Jupyter Notebook; C++ / Arduino; Git / GitHub; LaTeX; proportional-integral-derivative (PID) controller design.

ENGINEERING PROJECTS

Structures Lead, Uncrewed Aerial Vehicle (UAV) Quadcopter **2025–26**

- Led a three-person structures sub-team within a six-person multidisciplinary team, coordinating structural decisions on the laser-cut plywood airframe through five design revisions. Solely owned the gimbal assembly, from CAD and FEA to 3D-printed parts, and ran all of the team's 3D printing and print quality checks.
- Led the sub-team's landing-leg redesign using FEA on the 5g hard-landing and vibration cases, cutting up to 35% of structural mass while keeping the safety factor above the required minimum. The drone flew with no structural failures.

Wing Design, Search-and-Rescue UAV **2024–25**

- In a five-person team, designed the wing for a search-and-rescue UAV, comparing 11 NACA aerofoils in XFLR5 and iterating the planform to maximise lift-to-drag at cruise.
- Wrote a Python script for spar bending and deflection, compared aluminium 7075-T6 with carbon fibre for an I-beam spar, and built a scale model, giving a fully justified wing design checked for manufacturability.

Wind Tunnel Testing, NACA 0020 Aerofoil and Finite Wing **2025–26**

- Ran three wind tunnel experiments, collecting boundary-layer, pressure, lift and drag data, including finite-wing testing in the RJ Mitchell Wind Tunnel.

- Validated the results against XFOIL and XFLR5 (measured maximum lift-to-drag ratio of 20.2), and traced the drop in lift-curve slope from aerofoil to finite wing to induced downwash and tip vortices.

Computational Fluid Dynamics of a Swept, Tapered Wing **2025–26**

- Modelled a swept, tapered wing in OpenVSP and ran simulations in ANSYS Fluent, with a coarse, medium and fine mesh convergence study including adaptive refinement.
- Showed drag was far more mesh-sensitive than lift, falling a further 43% from medium to fine mesh, and validated the boundary layer against the Blasius solution and log-law wall scaling.

Finite Element Analysis of Beam, Plate and Wing Structures **2025–26**

- Ran three linked finite element studies in ANSYS: sizing an H-section cantilever beam against yield (with a mesh-convergence study), a plate with a hole, and a 3D wing comparing shell elements and materials.
- Showed that moving the hole towards the plate edge nearly doubled the stress concentration factor (3.64 to 6.96), giving clear evidence for the rivet and hole edge-distance rules used in real airframes.

Boeing 747 Flight Dynamics and Controller Design **2025–26**

- Built a longitudinal flight-dynamics model of a Boeing 747-200 in Python and designed a PID pitch-rate controller using root-locus analysis.
- Achieved Level 1 handling qualities against the MIL-F-8785C and DEF-STAN 00-970 standards, staying stable across plus or minus 35% uncertainty in natural frequency.

Fatigue Failure Investigation, Cast-Steel Axle Shaft **2025–26**

- Used fractography (crack initiation sites, beach and ratchet marks) to trace the fracture of a cast-steel axle shaft to high-cycle fatigue under reverse bending.
- Calculated critical crack size and stress intensity to show a safety factor of 1.73 at final fracture, ruling out overload, and wrote a consultancy-style technical report recommending a larger shaft diameter plus shot peening to extend service life.

Structures Member, Model Rocket (Southampton University Spaceflight Society) **2024–present**

- Manufactured body sections by glass-fibre and epoxy layup, learning composite methods from scratch.
- Designed and 3D-printed a lattice-stiffened mandrel to form the body tubes, and modelled the rocket in OpenRocket and SolidWorks. Launch pending.

ACHIEVEMENTS AND LEADERSHIP

- NASA Johnson Space Center engineering and space programme, Houston (competitive entry). Team placed 2nd of around 10 in both the Thermal Tile and Rocket Building Challenges.
- Co-founder and joint leader, Aerospace and Astrophysics Society, The Skinners' School (Year 12–13): ran weekly sessions for 15–16 regular members.
- Physics Olympiad Gold (Year 13); Cambridge Chemistry Challenge Silver; Senior Mathematical Challenge Gold.
- Duke of Edinburgh Bronze Award, including about 12 months volunteering at Oxfam.

CERTIFICATIONS AND TRAINING

- Flight test engineer, National Flying Laboratory Centre flight test lab, Saab 340B (Cranfield partnership, June 2026): studied phugoid, short-period and other dynamic modes in real flight.
- Engineering Workshop Practical Training, CEMAST, South Hampshire College Group (June 2025): turning, milling, hand skills, motor maintenance, pipework, soldering, gearbox strip and rebuild, sheet metal assembly.
- Machine Shop Trained, University of Southampton: lathe, milling, FDM 3D printing.

INTERESTS

Piano, guitar, cycling, badminton, photography.