Akshat Kothari

St John's College, Cambridge, CB2 1TP | +44 7599116497 | ak2611@cam.ac.uk |
https://www.linkedin.com/in/akshat-kothari10

Education

Oct 2024 - 2028 ***Master of Engineering,*** **University of Cambridge** **Cambridge**

- **Structural Analysis:** Designed and constructed a truss sustaining 7 kN load; performed buckling calculations, pin-jointed truss analysis, and stability checks, and documented findings in a formal technical report.
- **Computational Engineering:** Developed a Mars lander simulation in **C++ and Python** incorporating **propulsion control algorithms**; implemented a Flood Warning System in Python using **object-oriented programming.**
- **Electronic & Digital Systems:** Built a level synthesiser integrating MOSFET-based analogue circuitry and digital logic components; validated performance with oscilloscope diagnostics and LTSpice simulation.
- **CAD & Technical Drawing:** Produced detailed models and engineering drawings in **SolidWorks**, including a single-rider rollercoaster with motion simulation and stress estimation.
- **Theoretical Foundations:** Applied thermofluid dynamics (Bernoulli principles, heat engines, turbines, and jet propulsion), **vibration analysis** (natural frequencies, damping), and **advanced mathematics** (differential equations, Fourier analysis, numerical methods) to model and optimise engineering systems.
- **Systems Design & Teamwork:** Collaborated on the Makers Valley infrastructure initiative (South Africa), applying systems mapping and the Double Diamond model to prototype an accessible integrated transport solution that would improve efficiency by 15% while balancing diverse stakeholder requirements.

Sept 2022 – Aug 2024 ***A levels*** **Greenhead College** **Huddersfield**

- Grades: **A*A*A*A*** in Further Maths, Physics, Maths and Chemistry.
- Partook in Computing, Badminton and Debating Societies.

Jan 2018 – Aug 2022 ***GCSE*** **Trinity Academy Halifax** **Halifax**

- Achieved **Ten Grade 9s** in subjects including Mathematics, Chemistry, Physics, Biology, English Language, and French.
- As **Head Boy** I showcased leadership and responsibility by representing the student body to important stakeholders such as the MP and the Mayor.

Experience

Space Flight Team Oct 2024-present
Cambridge University Space Flight Society

- Collaborated in a student team to design, simulate, and construct a small-scale rocket using **AutoCAD Fusion**, 3D printing and OpenRocket.
- Designed the **CAD model** for a precision rocket launch rail, turning team concepts into manufacturable drawings that improved launch stability and alignment.
- Worked with teammates from electronics and propulsion to **integrate mechanical and electronic subsystems**, making sure components interfaced reliably.
- Learned to deliver high-quality designs under tight timelines in a **collaborative, fast-moving student team**, developing problem-solving skills along the way.

Decarbonising Transport Work Experience Week July 2023
University of York

- Gained hands-on experience in **sustainable engineering** practices while collaborating in a team to solve practical engineering tasks.
- Collaborated with professionals on reducing carbon emissions in transportation through **researching** lithium-ion batteries and their applications in EVs.
- Developed and **presented** the opportunities and challenges around lithium-ion batteries to a group of academics; focusing on their degradation.

Private Tutor Nov 2022- Mar 2024
Tutored in Maths, Physics, Chemistry, and English for GCSE and A-Level Exams

- Tailored teaching methods to individual student needs, leading to top exam results.
- Utilised strong communication and problem-solving skills to address and overcome learning obstacles.
- Successfully helped students enhance their understanding and confidence in core subjects.

Volunteer Nov 2022-Jan 2024
British Heart Foundation

- Oversaw Shop Floor Operations: Managed customer interactions and sales, bolstering marketing, communication, and teamwork skills.

Skills and Interests

Languages: **English** *(Fluent),* **Hindi***(Fluent),* **French** *(Basic Working Proficiency)*

Technical & Engineering Skills: **SolidWorks** *(Toolbox, motion simulation, engineering drawings),* **Autodesk Fusion**, **OpenRocket**, **3D printing**, **LTSpice**, , **analogue and digital circuit design** *(MOSFETs, logic systems),* **systems mapping and design frameworks** *(Double Diamond).*

Computational Skills: **Python** *(OOP, NumPy, Matplotlib, data analysis),* **C++** *(simulation and control),* ***MATLAB*** *(numerical methods, vibration and signal analysis),* **Fourier analysis**, **Excel** *(data modelling, optimisation),* **PowerPoint** *(technical presentations)*

Hobbies: St Johns College Chess Team; St Johns College Cricket; Recreational Tennis; Reading.

Referees

Dr H. Joyce, *Director of Studies, Department of Engineering, University of Cambridge, hjj28@cam.ac.uk*
Dr G. Evans, *Tutor, St John's College, University of Cambridge, gle24@cam.ac.uk*