AARUNI ARORA

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EDUCATION

Imperial College London *(Ongoing) Oct 2020 - Jun 2025*
MEng in Biomedical Engineering with a Year in Industry *Grade: On track for First Class Honours*
Focus in Electrical and Computational Engineering Pathway

- Automated a gene editing and a cancer cell detection application, achieving 100% optimal accuracy in Python.
- Designed a stethoscope on OrCAD and built a physical prototype with 80% working efficiency.
- Delivered 3 financial research reports to enhance investment-based skills with the StockHub Analysis Group.
- *Volunteer experience*: Imperial Bioscience Review (published articles); Taekwondo ITF/WT Judge; Dance-based charity events; Hackathons; Vice President of Poetry Society (*Year 2*).

WORK EXPERIENCE

Dr Ferrari's Lab at LSE **London, UK**
Undergraduate Researcher *(Ongoing) Aug 2024 - Present*

- Assisting in managing a health economics project on 'Violence against Women', including grant writing.

Traverso Lab at MIT and BWH **Boston, MA, USA**
Research Trainee *Jan 2024 - Jul 2024*

- Involved in a DARPA-funded project focused on optimising the PCB design of a smart pill.
- Implemented Python-based feature extraction algorithms on heart and respiratory signals for data analysis.
- Labelled animal videos for machine learning models, attaining >80% inter-rater reliability amongst the team.
- Fabricated a lightweight wearable device (~100g) for EEG signal data collection. (pending publication)

Vaccine and Immunotherapy Center at Harvard Medical School and MGH **Boston, MA, USA**
Visiting Research Scholar *Jul 2023 - Dec 2023*

- Secured over £4000 in Turing Scheme Grant to do a Year in Industry in the USA by the UK government.
- Contributed to and standardised protocols for immunotherapy research and lab work on type 1 diabetes.
- Processed >100 islet and H&E images and executed statistical analysis for Flow Cytometry. (JDRF-funded)
- Improved islet transplantation effectiveness from 10 to a 30-day graft survival in murine models through interdisciplinary collaboration with reputable institutes. (pending publication)

Imperial College London **London, UK**

- *Undergraduate Teaching Assistant for Programming*: Spearheaded Quartus Prime v16 and Python training sessions, offering mentorship to approximately 70 students.
- *UROP at the Department of Brain Sciences with UK Dementia Research Institute*: Executed and oversaw electrophysiological research on temporal interference brain stimulations to master mice neuromodulation.

PROJECTS

Final Year Individual Project *(Ongoing) Oct 2024 - Jun 2025*

- Facilitating EEG data collection and analysis of neural markers for 40 participants under Dr Aldo Faisal.

HeartReach: A Low-Cost Imperial Bioengineering Outreach *Oct 2022 - Jun 2023*

- Devised an innovative tool with Unity Game Engine, Augmented Reality (AR) and Arduino technologies to elevate interest in and awareness of bioengineering-based solutions in GCSE students, working in a team of 5.
- Organised a pilot study to assess the interest of GCSE students in products similar to HeartReach and analysed a ~70% increase in the engagement rate post-product interaction.

DinoMaze: AR Educational App Development for Cerebral Palsy (CP) Students *Nov 2022 - Jan 2023*

- Collaborated on developing a 3D AR-based educational app for children aged five and above with CP GMFCS Levels 3 to 5 using Unity and Visual Studio (C#) to meet the client's, The Pace Centre's, criteria.
- Programmed an engaging quiz-based maze to improve critical thinking, problem-solving and collaboration skills by at least 5% among children using DinoMaze.

Hydrotherapy Device for Kids with Cerebral Palsy (Co-Project Lead/Manager) *Oct 2021 - Jun 2022*

- Co-engineered a floatation device for adolescents (≤75kg), enabling sports therapy and social interaction.
- Promoted the adaptable mechanical device to 3 potential clients at the National CP Swimming Competition in Nottingham and received positive feedback.

SKILLS

Languages: Arduino, C#, LaTeX, MATLAB, Python (Jupyter, Matplotlib, NumPy, Pandas, SciPy)
Software: Altium, Canva, FlowJo, GraphPad, GitHub, ImageJ, LAS X, LTSpice, OrCAD, SolidWorks, Unity
Lab: 3D Printing (PLA, Resin), Circuitry, Confocal and Tissue Microscopy, ELISA, Flow Cytometry, Microtome, Silicone Moulding, Oscilloscope, Soldering, Western Blot
Certifications: Digital Signal Processing and Analysis (*April 2024*); PyTorch for Deep Learning (*Ongoing*); Statistics and Machine Learning (*Ongoing*); Linux Commands and Systems (*Ongoing*)