Ansh Arora

An inquisitive and motivated computer science student self-taught in various fields of software engineering such as robotics, web development and deep learning. Over the past 4 years I have explored new areas of computer science and mathematics by taking on challenges and projects, striving for elegance in my approaches and excellence in my pursuits. I hope to continue to do so over the course of a degree.

Contacts

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Github

Skills

Python

Javascript

React

Problem Solving

I particularly enjoy maths and computer science because challenging problems in both enable me to think creatively and reach rewarding solutions.

Presenting

I have improved my public speaking skills over the past few years, taking on presentations on topics interesting to me such as Neural Networks, Chaos Theory, and a maze-solving robot I built.

Planning & Time Management

Time management is a skill I've come to acquire after organising projects alongside schoolwork, taking the time necessary to make general plans and then set deadlines for myself and stick to them.

Education

British School of Barcelona

International A Level	A* achieved, A*A*A* predicted	January 2024 - June 2025
International AS Level	AAA achieved, A acheived EPQ, A predicted	September 2023 - January 2025
IGCSE(9-1)	999998888776	September 2021 - June 2023

Maths Society

Founded a maths society in my school with the help of the head of the maths department to practice enrichment questions with other students and help set up competitions. So far we have set up and enrolled teams for the Ritangle competition.

UKMT maths challenges

Participated in the Intermediate Maths Challenge twice, earning silver the first time (top 16-17% of entrants) and gold (top 8-9% of entrants) and best in school the second. Then participated in the Senior Maths Challenge thrice, earning gold and best in school thrice and qualifying for the British Mathematical Olympiad this year (top ~1000 out of ~80000 entrants). Participated in the British Mathematical Olympiad last year by discretionary entree and earned a merit.

Green Team

Collaborated in a team of four on the construction of gardening facilities and a simple outdoor classroom.

Relevant Experience & Projects

Fire Detecting UAV

May 2024 - Present

Interests

- Rock climbing
- Reading (mostly fiction)
- Coding
- Trekking

Worked in a team of 4 to build a UAV which could fly over forests and similar terrain to spot fires and collect data on where they tend to start and spread. Having seen the impact of drought and heat waves on our region, 3 friends and I wanted to see how our skills could contribute towards such problems. I was in charge of programming, where I interfaced with Ardupilot to steer and stabilise the drone, wrote a hybrid algorithm including a Convolutional Neural Network to spot fires in frames of footage taken from underneath the drone, and stored and analysed records of where fires were spotted. The project is still in progress, with a second prototype being developed, and we have sent a proposal to the regional Forest Defense Group, hoping for a licence to better test our drone.

Maze-solving Robot

November 2023 - April 2024

For the Extended Project Qualification Artefact, I built a small robot that could reach the centre of a 16x16 unit maze with no information on the maze to begin with. This was my first big robotics project, and in the process of working on it I picked up many skills such as the persistence needed to scrap and rebuild several models and constantly recalibrate parts, as well as low-level programming with C++. I wrote an accompanying 5500+ words dissertation discussing the floodfill algorithm used to navigate the mouse, the construction process using Arduino, and the possible uses of such a device, for example in inventory management in a warehouse. The artefact earned full marks.

Esoteric Programming Language

January 2023 - June 2023

A personal project made up of a compiler, debugger and text editor for my own esoteric programming language which was inspired by and is a superset of Urban Müller's BF. This was one of my earlier projects made in python using Tkinter, and it helped me better understand concepts such as object oriented programming and asynchronous programming. I enjoyed this project because it tested my creativity in the process of designing the commands of the language I made to fuse BF with ideas from modern languages such as functional programming, and I was able to write interesting programs in the language I had made after I was finished.