

# PALVINDER SINGH SANDER

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## EDUCATION

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### University of Birmingham, UK - BSc Computer Science

September 2019 - 2022

- First year modules include: Programming (Python, Java & Haskell), Logic & Computation, Discrete Mathematics, Data Structures & Algorithms, Machine Learning, Economics & The Real World.
- CSS (Computer Science Society) & AFNOM (Cyber Security Club) member participating in hackathons, workshops and seminars.

### Queen Mary's Grammar School, UK

September 2012 - August 2019

- 4 A-Levels (AAAB):  
Mathematics, Computing, Physics, Further-Mathematics
- 13 GCSEs (11A\* 2A):  
Mathematics, Further Mathematics, Physics, Biology, Chemistry, Computing, History, Ethics, Philosophy, ICT, English Literature, English Language, Spanish

## EXPERIENCE AND PROJECTS

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### HackTheMidlands 2019 - Best New-Comer Hack Prize

- Partnered with 3 Computer Science students to build a service, with Twilio, that sends an SMS with directions to a train station, train journey details and weather info, all without the need for Wi-Fi.
- Implemented a Python Flask server capable of handling requests, hosted on Google Cloud Compute-Engine.
- Built an android application to send geo-location data within a SMS message.

### OxfordHack 2019 - Mathematics to LaTeX

- Built a tool that takes an image of mathematics, classifies its contents and then converts it into LaTeX and if a definite integral exists, calculates the result. Built with Python using open-cv for image segmentation and classification.
- Enhanced my ability to think critically by designing algorithms, with optimised time complexities, to quickly parse formulae.

### Project Horizon

- Collaborated with 9 students to launch a payload connected to a high-altitude balloon into the Stratosphere.
- Captured data on GPS location, CO2 concentration, humidity and UV levels by programming an Arduino as a flight computer, in Java and C++.
- Delegated tasks within my team to ensure the payload was successfully launched to  $\approx 140,000\text{ft}$  and then retrieved.
- Sourced sponsorships and organised mentoring to educate local students about the impact of science and technology.

### Twitter & Stock Price Data Analysis

- Developed a web application in Python that correlates tweet sentiment with stock prices live, as part of an independent research project.
- Leveraged to inform investment on the London Stock Exchange by the Queen Mary's Grammar School Economics Society.

### Book Sharing Android Application

- Independently learnt Java and created an Android app to allow students to scan and share books for free, using Firebase services and Machine-Learning-Kit. Received the highest mark in my cohort.

## SKILLS AND ACHIEVEMENTS

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<b>Mathematics</b>	Received awards for UKMT Senior Mathematics Olympiad.
<b>Software Development</b>	Enrolled in hackathons: OxfordHack, HackTheMidlands. Won best Queen Mary's Computer Scientist Award 2018. Competent with Python, Java, Android Development, Flask and Git.
<b>Problem Solving</b>	Created a program which detects and analyses hand movements for finger-painting in real-time using Java and OpenCV as an independent research project. Completed online coding challenges (Deutsche Bank Challenge, Project Euler).
<b>Leadership &amp; Teamwork</b>	Led my team to win a CTF challenge at a cyber-security summer camp. Elected as a school prefect, ensuring welfare of others. Mentored students in Mathematics, Physics and Computer Science for 3 years. Founder of the Queen Mary's programming club; taught students basic constructs and paradigms of programming.