I have been obsessed with the enigmatic field of Computer Architecture since I built my gaming PC during lockdown. I spent countless hours researching how to get my RAM running at 3200MHz instead of at 2133MHz - by enabling EXPO in the BIOS. I often watch YouTubers such as Linus Tech Tips and Gamers Nexus, keeping myself informed about advancements in computer hardware and leveraging any recent developments, to improve the performance and user experience of my Gaming PC. As a result, my PC has transformed into a test-bench where I experiment with the impact of altering BIOS settings, familiarise myself with Linux, and trial useful open-source tools. Improving my problem-solving skills, but also my proficiency and perseverance to troubleshoot and identify areas of malfunction. Being a de facto tech admin for family and friends, resolving and communicating their tech issues has instilled in me a deep appreciation for the versatility of computers. I am curious to delve into how processors are made, to perform a wide range of tasks from crunching numbers to creating images and operating at any scale, from smartwatches to servers, powering the internet.

Piqued by such versatility, I read Digital Logic and Computer Design by M. Morris Mano. The link between the different layers of abstraction in computer design, underpinned by general integrated circuits was astounding. From programming to processors, to circuits, to gates - appreciating the intricate relationship between a command in code, to the movement of electrons to perform the task – was as profound as philosophical. This fascination took further root during my internship at Aheesa, a hardware and embedded design house in India, where I was tasked to create solutions to mathematical concepts used in the backend of machine learning algorithms on a RISC-V processor. By employing the link between layers of abstraction, I successfully converted my prototype programs written in C and Python to Assembly functions specific to the RV32 chip, and presented the final system to the team, with a rationale for the algorithms used. This internship made me aware, in a tangible way, as to how inefficient code leads to a long wait period for an output while efficient one cuts the slack perceptibly.

Continuing from the internship, I challenged myself to gain a better understanding of the mathematics behind digital design. I was able to grasp the use of Boolean Algebra, to represent problems as a series of inputs and outputs and the use of procedural techniques to simplify any complex relationship. A technique I now use in daily life to break down problems and find the smart solution - a key skill for this course.

For over 2 years, I’ve been involved in the daily activities of a nearby Hindu Temple for DofE, where I took the initiative to digitise the temple, creating an e-receipt system. I collaborated with committee members and iterated through various workflows until the final implementation was decided – the use of a Google Form, with a script to copy the results onto a sheet. The solution was guided by, among other requirements, the need to serve multiple members accessing data, in a tiered way, to protect identifiable information stored.

I enjoy cycling during my free time. Setting myself a target of inspiring routes, time goals, practice sessions, measuring parameters to improve, and sharing the details with other enthusiasts – the raft of activities has been as much fun as the ride itself. The ubiquitous role of technology in pursuit of such physical activity is inspiring too.

For me, studying the application of concepts – from hardware upwards, to user experience - to deliver a practical utility, is the main draw. A degree with a focus on Computer Architecture and Information Engineering will equip me with the right building blocks upon which I will add layers of further learning, to launch myself as a thorough professional who will never miss the big picture whilst being skilled at the brass tacks too.