My interest in computer science was first captured by the scenario in the film ‘Matrix’ that the main character ‘Neo’ is working with all those fancy codes and that for an eight years old boy, was incredibly cool. After I learnt to program, the sense of achievement I gained when I finished the first program, which was printing ‘Hello World’, was enormous and that was a combustion promoter of my enthusiasm on computer science. With further exploration in this field, from the first ‘hello world’ to the neural network I am currently researching, my passion was fired up.

My interest was only on programming initially because when I designed a program, I treated myself the god of a world in my mind where I could achieve anything. Nevertheless, while I was studying CS at AS level, I realised that the theory behind programming is much more important since all applications are meaningless without theoretical supports so instead of what I did at IGCSE, I put much more effort on understanding of theories like the principle of Bubble sort and how a compiler transforms high-level language to machine code to enable computers to understand. Instead of carming theories up into my brain, I attempted to build up comprehensions of them. Whilst I was learning those theories, I was impressed by the wisdom of previous computer scientist due to their creativity and rigorousness. I hope I could be a computer scientist like them to contribute my ideas to all humans.

To fulfil my knowledge beyond IGCSE and A-level, I attended and won a third-place of 2019 SPC Suzhou programming competition. Regardless of the prize I won, I did not manage to code an algorithm called KNN classifier and I put it into my mind deeply. After the competition, I did some research on this algorithm. This algorithm aims to classify an object by comparing the number of classified objects in a range k to distinguish its type. I did not realise that all the relative data can be stored in a multi-dimension array so that the ‘distance’ between the data of the object and others could be calculated then by checking the K nearest neighbour, the object can be classified.

On a school morning, I was waked by my alarm clock and I pressed it up. However, I fell in asleep again so I was late at school. While I was in a taxi to school, an idea suddenly flashed into my mind: is it possible to design a program that distinguishes whether the user gets up after the alarm was turned off and alarm the user if they fell asleep again? By capturing photos from a micro-camera installed on the clock, we can compare the Euclidean distance of photos taken before and after the alarm was turned off to differentiate whether the user has gotten up. However, how we should set an appropriate threshold which distinguishes whether or not the user is still in bed becomes THE key issue of my entire program. Sometimes the user might fall in asleep again with a different sleeping position after they turn off the alarm which resulted in a significant change of the Euclidean distance as well. To address this problem, I took a survey in our grade to ask students’ roommates to take pictures of them when they are still in bed and the picture when they leave the bed and send those photos to me. After receiving around 100 photos provided by my zealous classmates, I wrote a program to get the average percentage difference between the photo when they are in asleep and waked up and leave the bed. The final result of the average difference is about 30%. With this data, my program could perform better on recognising whether the user is still on the bed or not. Although the alarming clock is temporarily not possible for me to make, I managed to code the entire program. However, this method has a fatal flaw: if the brightness of the picture is changed, like the user turns the light on but fall in asleep again, the difference between two pictures would be enormous since the RGB values have all been changed. Since I have read some articles about Neutral Network and Computer Vision, I started to think whether a Neural Network would perform better at recognising people in the bed. ~~Moreover, it is feasible that by analysing the relationship between the sleeping positions and the times used to wake the user up (an indication of sleeping quality) by computer vision, producing recommendations of sleeping position to different individuals could be achievable.~~

Though my learning experience in computer science, I feel that those well-designed algorithms, complex but delicate logic and all other fascinating stuff in computer science become more and more attractive. Every time I understood the theory behind an application or an algorithm, I was impressed. I believe my study at university could give me guidance to further exploration in computer science.