Since childhood, I have had a strong interest in numbers. When someone told me their phone number, I would memorize it quickly; in order to practice my calculation ability, I habitually sum up this string of numbers and decompose it into prime numbers. As my mathematical knowledge grows, its logic and beauty always captivates me. It amazes me how a messy polynomial can be transformed into a product of several polynomials, or how the sum of an infinite geometric series can be expressed as such a simple fraction.

In various math competitions, from number theory to functions, from geometry to probability, all kinds of mathematical problems constantly challenge me. When preparing for the AMC (全称), I encountered a dice rolling problem that asked for the probability of getting an odd number before all even numbers appeared once. I was immersed in my thoughts and missed dinner, but the satisfaction after finally working out the correct answer before going to bed was incomparable to anything else. From permutation and combination in elementary school math Olympiad to conditional probability in high school, such problems have sparked my greatest interest in probability and statistics.

In recent years, with the development of computing power, data science based on big data has been applied in various fields. In my spare time, I took an introductory course in data science and collaborated with my classmates on a case study involving the identification and categorization of coins using computer visualization techniques. We published a paper on this topic. Through this experience, I gained a comprehensive understanding of the application of data science, from data collection and classification to building convolutional neural network (CNN) models and performing data analysis using Python programming. Marveling at its power, I became more drawn to the underlying mathematical principles.

CNNs heavily rely on matrix operations, such as convolutional filters, which extract features from complex datasets. Related mathematical principles such as linear transformations and matrix factorizations underpin the efficacy of CNNs. I first studied matrix when preparing for ACT but did not fully understand its significance in applied scenarios. However, during the big data project, I am amazed by the powerfulness of it and would like to learn more about linear algebra systematically in my future university studies.

Another example that made me marvel at the power of mathematics is the Space City Competition I participated in, which is a global event organized by NASA. In the Asian regional finals, we were tasked with using the Lagrange method to calculate the position of the perigee. The principle behind it is based on the condition of force equilibrium for a mass in a gravitational field. Our team utilized mathematical modeling and equation-solving techniques to determine the location of the Lagrange points during the competition. Concepts such as potential functions and integration methods in mathematics played a crucial role in practical applications, once again highlighting the strength of mathematics to me.

In my leisure time, I often read books about mathematics. Among them, "The Beauty of Mathematics" is one that I frequently browse through. What impressed me the most was the example of using Hidden Markov Models for speech recognition. By learning from a large amount of speech data through such an intuitive and concise probability model, computers can gradually engage in conversations with humans. It's truly fascinating.

In the future, I aspire to follow in my father‘s footsteps who study mathematics at Oxford and applied it in the financial industry after graduation. I aim to pursue further studies in mathematics at a university in the United Kingdom and apply mathematical principles to the field of data science and other domains. Ultimately, my goal is to continue enjoying the pleasure that mathematics brings to my life.