Pioneer application form

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4.1

IGCSE Computer Science: A\*

USACO promoted to Gold level

CCF NOI Online elementary division 2020: ranked first 25%

CCF CSP-S 2020: third award

ACSL senior 2020 first round: successfully promoted

CCC senior division 2021: distinction

I have begun to learn programming since the second year of junior high school by reading some C++ introductory books. At that time, I was fascinated by the magical results produced by lines of codes. Since then, I have kept the habit of coding every week, expanding my arsenal to include C++, Python, Java, and MATLAB. These programming languages have become integral tools for my work in mathematics, as well.

Interest is the best teacher and I am always keen on Computer Science. I have three years of experience in computer programming, and I enjoy the process of completely submerging myself in typing out the logical steps of algorithms. I often write programs that help my classmates or family on specific tasks such as a random seat-assigning program for our class, and the sense of fulfillment after my code compiles has been a major motivation behind my progress. As I look forward to becoming a programmer to develop cutting-edge technologies and utilize them to benefit society, I want to make sure that I lay down a solid academic foundation today.

4.2 mathematics

IGCSE Mathematics: A\*

Chinese High School Mathematics League for Grade 8: First Price

AIMO2019 Certificate of Distinction

HiMCM 2020: honorable mention

COMC 2020: national gold award, rank 7 in China

AMC12A 2021: certificate of distinction, China national top 15%, promoted to AIME

AMC12B 2021: certificate of distinction, China national top 15%, promoted to AIME

AIME II 2021: 7 points

I have been interested in mathematics since my childhood. Reading books about math and finding challenging problems to solve by myself provided endless hours of mental stimulation for me. In middle school, I began reading high school textbooks by myself, and now I have finished all the compulsory and selective textbooks. I not only achieve excellent grades but also retain the spirit of exploration. Whenever I learn a new theorem or formula, I will try to deduce it by myself. While deducing existing formulas seems redundant, this exercise allows me to develop new perspectives about mathematics.

Learning mathematics makes me a more logical and rational person. I enjoy observing the world around me and try to find answers to many questions, whether practical or theoretical. Consequently, mathematics is a fundamental tool. Furthermore, elegant proofs and theorems to abstract mathematical constructions present a sense of beauty. For instance, Euler’s formula, e^(iπ)+1=0, uses five fundamental numbers to bridge the real and the imaginary. I hope I can learn more knowledge in math in the future and even invent and create branches of math in the capacity of a mathematician to continue kindling the sense of awe for younger generations.

4.3

IGCSE Physics: A\*

I conduct experiments with classmates and the physics teacher twice a month, so I am familiar with various laboratory equipment and procedures. These experiments aim largely at confirming existing physical theories and laws.

At the beginning of middle school, I conducted an experiment measuring the velocity of a toy car. In this one experiment, I learned about friction, inertia, and uncertainties in measurement. The fact that such a simple experiment could become an integrated learning process was truly inspiring. At each grade level, the subject of physics would take be deeper into the rabbit hole and reveal more about the fundamental laws of nature. In addition, it is easy to ask big, existential questions through physics. From the scale of the universe to the realm of subatomic interactions, physics leads me to explore reality through its most fundamental layer. When I managed to deduce formulas and building small tools using the knowledge of physics, I feel a sense of achievement as if I have mastered the secret of the universe. I hope that by learning deeper theories in physics, I can receive the timeless wisdom about our existence.

IGCSE Physics: A\*

IGCSE Chemistry: A\*

In the 21st century, one of the most significant aspects affecting people is science and technology. Science and technology bring about social progress. I hope to become a scientist and develop new technologies to improve our society, such as those that would raise life expectancies for the general public.

Sociology is a subject that involves critical thinking, which will help me become better at perceiving other people's needs and wants or emotions. Therefore, I can develop insights not only on a high level but also the personal level. By learning about the various driving forces present in social interactions, I can develop better awareness of the various interests of people around us and the value of community as a whole. Only by fully understanding this society can we make better progress.

My school has introduced the pioneer program to us as an opportunity to do research with top university professors. For me, this is a precious opportunity to kickstart my research career.

Both my mathematics teacher and computer science teacher have given high evaluation of my ability in discovering new knowledge. For me, solving challenging problems using multiple methods has become a way of expression. As I have retained consistent academic standing in high school, I want to expand my learning to university-level courses and challenge myself. The Pioneer Program provides a stimulating learning environment with knowledge and information beyond the textbook and highly motivated peers from whom I can learn, as well.

I especially value the academic rigor of the program. While I use my spare time to explore advanced topics in sciences, my learning cannot compare with one led by an experienced professor who can answer my questions timely with satisfying depth. The level of engagement with the instructor through Pioneer will ensure that my learning is rewarding.

I am not afraid of difficult requirements and arrangements. I can always find a way to balance between IB requirements and the pioneer program. As a multi-tasker by nature, I never felt restrained by my various engagement in academic competitions, school learning, clubs, and volunteer. I have managed satisfactory results in all of them, and the high pressure they exert on my mind actually helps improve my learning. Therefore, I don’t have any hesitation about adding Pioneer into my life.

One of the more senior students have participated in a Pioneer project, and he spoke highly of it. The depth of learning and engaging interactions with renowned scholars are rarely found even in actual colleges. I hope that my personal experience can mirror his, and I really want to make progress and gain unique experience through the Pioneer program.