***Common prompt: Some students have a background, identity, interest, or talent that is so meaningful they believe their application would be incomplete without it. If this sounds like you, then please share your story.***

My journey of mathematics started in 2014. Like any young and curious little girl, I received a present, an AP Calculus textbook, from a dear teacher. Its obscure content on the notion of limit made my learning unsatisfactory. I was unable to accept the notion of “arbitrary closeness". Then I tried to use my language to fill the emptiness of it. First I was convinced that I had to find a way to achieve “infinitesimal". For that I defined a special kind of “list" of numbers, progressing becoming less than any number “nominable"(表达不清晰) and any function whose values formed a difference between a number and elements of such a list with another such list plus an as parameters would be considered to have a “limit" at point .(表达不清晰) This was found later by a math teacher to be “surprisingly similar to the definition of limit given by Cauchy in his *Cours d’Analyse*". For that point forward, I embarked on the wonderful journey of exploration in mathematics and have never stopped.

Recently I’m also into the theories of pre-tertiary mathematical education. I believe that the idea of general education of modern mathematical notions is crucial in current and future secondary mathematical education. To verify that, I conducted a social experiment. I gathered a group of A-Level students who are applying for math majors and teachers; and I taught an alternative curriculum, in which modern notions were incorporated with the traditional content. For example, when I taught the properties of the real line, the notion of topological space and ordered field were introduced; when I taught the exponential and logarithm functions, the properties of general sequence and series of functions were given. Theorems that require higher knowledge to deduce or are too technical to be presented at the pre-tertiary phase, such as the equivalent definitions of the real number, were admitted without proof. This experiment is still on-going and the assessment of the result will be drawn from the comparison of our students against others trained in the traditional way based on acceptance, MAT score, interview feedback, and GPA. After careful reading of related researches and historic literature, I found out that my approach is surprisingly similar to that of Bourbaki, and I did learn from the failure thereof and refined my current approach. This experiment enhanced my understanding of the relation between education and society and gave me new insights of the subject I love.

Besides studying and researching independently, I also love sharing. In 2017, I organized a mathematical history seminar on the general use of analytic methods in the history of mathematics. My lecture topic is calculus of variation, with application to the brachistochrone problem and the isoperimetric problem, the fundamental theorem of algebra, the Jordan curve theorem, the Sard’s theorem, the Brouwer’s fixed point theorem, etc. As an organizer, I talked to my high school’s coordinator for booking the classroom for the seminar, designed and opened up webpage for paper submission and audience registration, prepared the projector and computer, set up the posters and addressed the students about the seminar on our school’s assembly.

Currently, I am working on homological algebra and commutative algebra and their application in algebraic topology and algebraic geometry. I’m following Davis & Kirk’s *Lectures in Algebraic Topology* and the open-sourced textbook *The Stacks Project*. With the help of a Ph.D. student from Peking University, I have a chance to audit courses on homology theory and commutative algebra in PKU. Preparing myself with sufficient background in algebra and topology, I see this great opportunity more valuable than ever. I see my tertiary and higher education as a new opportunity of closer integration of resources and opportunities of application of my knowledge, as well as a platform to develop it further.

***8. Beyond what has already been shared in your application, what do you believe makes you stand out as a strong candidate for admissions to the University of California?***

“I’m a girl, a girl born inside a boy’s body, and it’s not my fault," I finished my speech in the transgender anonymous session at the Beijing LGBT Center. It is something I never would’ve imagined two years ago - confidence and extraordinariness, in a way that allows me to give a speech, as a female, about my identity, for the community.

I discovered my identity early in life and started to feel the damage of gender dysphoria in puberty. I was self-enclosed, unconfident and depressed. Since then, I became less proactive in socializing scenarios, lost friends, got unsatisfactory grades. I avoided going to restrooms and changing rooms, trying to be the same as other cisgender boys and hid my identity.

It all changed in 2018, when I finally nerved myself to come out with my parents. With help from my gender therapist, they understood my identity and decided to give support. I started my transition: trying clothes that were female oriented, experimenting with cosmetics, etc. The most important part was my voice training. Once I was in a cosmetics store with a cisfemale friend. I was talking to her and the staff heard my voice and said to me “boy, move to this side, you’re blocking the light," as if my friend was the only customer he cared about, and that my appearance wasn’t passing enough for him use the proper pronoun. I chose to see the story as a challenge as opposed to a setback. So I worked hard on my voice. My vocal cord hurt on an hourly basis. But eventually I achieved a relatively satisfactory result.

My appearance and voice became consistent. I would finally be able to speak to the crowd. In the past, when I organized my mathematical seminar, I was nervous about my voice. But now I stand up confidently, asking and answering questions when auditing courses at Peking University. I now live full-time as a female, enjoying socializing both in the real world and online, proudly showing my image to the world. In retrospect, my resilience in difficulties helped as much as the process of the transition. I have now become the woman I wanted to and I am more ready than ever to face any lemons life is to throw at me, whether it be gender, love, or academics.

***7. What have you done to make your school or your community a better place?***

I love community work and collaboration in my academic work. Moreover, I’m actually an open source projects leader. I have 2 open source textbook project, algebra-for-cute-girls, which is a graduate text aiming to formula relatively self-contained contents on algebra using categorical and higher categorical language, and elementary-analysis which is an attempt to help mathematical students transition from high school to university by providing them the mathematical foundations to modern analysis and other branches, such as first-order logic, natural deduction, ZFC axiomatic set theory, construction of number systems, etc. I also contribute to another open source wiki project, wuli.wiki, which provides self-contained physics content for high school and undergraduate students, much like the stacks project by Columbia University.

In the process of creating and contributing to these projects, I applied academic skills as well as interpersonal collaboration skills. I helped my co-authors with technical problems like using LaTeX and GitHub. We used peer-reviewing process to ensure the validity and quality of our drafts. I, specifically, as a leader, must know when to brainstorm and come up with ideas with my co-authors, but also when to make the tough decisions like which parts of the book stay and which part go. From past events I acquire the faith habitually that I am not suitable to be a leader or decision maker. But in these practices I developed these skills and become a relatively successful leader.

***2. Every person has a creative side, and it can be expressed in many ways: problem solving, original and innovative thinking, and artistically, to name a few. Describe how you express your creative side.***

Everyone, such as myself, loves romance. Internet give us the opportunity to pursue romance and intimate relationships online, but this journey is relatively undesirable to some of us: to be specific, I am talking about the sexual minorities in China.

There are social network apps for dating in China, of course; in fact, plenty of them with a diversity of functions like voice/"soul" matching, random chatting, public surveying, etc. But they at most times gives me and other minority people in China negative experiences. For example, I matched a person on an app called Douli. For a bit of background this app allows its user to set their SOGIE (sexual orientation - gender identity, expression), which is pretty great at the first glance to me and I set my real SOGIE. But when this person heard my voice and saw my SOGIE, he constantly negate my identity and claims that I am a male pervert. This really hurt me and made me uninstall this app at once.

This bad experience also inspired me in a way that motivates my friends at Beijing LGBT Center and me to come up the idea of writing an real minority-friendly dating app of our own. We did this from scratch: planned for SOGIE education functions like videos and in-app tests, contacted friendly organizations for spreading the app, etc. (TODO write a closure)