Statement of Purpose

When making academic choices, I value interest and passion more than anything else. That's why I chose USTC at the entrance of university. It's because I like the free course selection and major transfer policy there which I believe could help ensure that I'll be working on something that I'm truly passionate about. I intend to learn more about cryptography at the end of my freshman year and after talking with one professor working in this field, I decided to get transferred to the school of mathematics to build math foundations. For two and a half years, I studied fundamental math courses about algebra, geometry, analysis and optimisation. In my opinion, I not only gained a solid theoretical foundation from these courses but also got crucial training on reasoning and thinking. After that, I chose computational math as my specialisation with a hope to practice my computer programming skills more.

Speaking of professional goals, I primarily want to become a researcher in the future. It could be in the universities or the research department of technological firms. I love the intellectual challenge and the freedom to study problems that I'm curious about. What's more, doing researches also allows me to appreciate and interact with some of the most brilliant minds in the world. Meanwhile I'm also curious about other possibilities and I would be happy to experience doing practical work in companies and firms, such as things related to programming. I love the sense of achievement when you solved a practical problem or created fantastic results.

My experience in programming can be dated back to my freshman year when I was in the engineering department. I took part in a robot contest held by our school. Our team constructed a robot doing traditional Chinese paper-cutting. We have a human input the detailed requirement of the paper cut using an intelligent voice interaction routine. It was a fantastic experience to actually make cool things come to being by your own programming. Then in my sophomore year, I began doing some interesting class projects. In our course: 'introduction to computing system', we learnt how computer programs are interpreted and carried out in our computing systems from a bits and gates point of view. We write instructions in binary language and watch it run in a simulated small computing system LC-3. It was so interesting. In our computer graphics courses, we implemented many algorithms regarding image processing and 3D reconstruction. Then at the end of the semester, we did some cool projects realising the fascinating effects.

In my junior years, I started to get a taste at doing researches. I first took part in the ICM contest and constructed a model evaluating the influence of different factors on a region's fragility by doing correlation analysis and the neuron network. Through this experience, I came to understand what researching in teams and writing paper is like. Then I signed up for an undergraduate research program at our university and began studying a particular kind of transforms called AONT under the guidance of Prof. Zhang. The research mainly involves linear algebra and finite field and helped me overcome the fear of inadequate knowledge when doing researches. I realised that it's unrealistic to hope to know everything before conducting research. You ability to learn alongside is what's most important. Then in the summer of my junior year, I went on doing a summer internship at NTU,Singapore under the guidance of professor Guo Jian. I studied preimage attacks on round-reduced versions of the Keccak hash function family. I mainly studied the factors influencing the complexity of the attacks and try to find out more powerful attacks by controlling the factors. I learnt a lot about the importance of observing and accumulating experience in research during this period.

First of all, I am currently planning to study cryptography in the following years. I like cryptography more than anything else because I like its elegance behind complexity. I'm broadly interested in algorithms, modelling and symbolic calculation. I'm also curious about distributed systems. I have been admiring XXX for a long time. And if I could, I wish I could join this lab in the future. Besides cryptography, I'm also interested in the topic of big data computing and data mining. Nowadays, many machine learning or data mining methods are more like learning an index for searching and relying on deep learning to build a powerful model to understand the data. It is undeniable that this method is feasible, and it is also in line with the learning rules of the human brain, but I think what I should do is to use more mathematical or structural techniques to simplify the model to achieve truly simple and effective modeling.

Now I want to talk about my reasons for applying to XXX.

The first reason is that academically, XXXX is famous for XXXXXX. And I've constantly been hearing about XXXXXXXXXX, and I do hope I could learn about it. Therefore, I'd appreciate it if I could get admitted to XXXXXX and get a chance to know the academic research taking place in XXXXX.

Secondly, I'm attracted by XXXXXX of XXXXX program in XXXXXX.

To sum up, I'm not only deeply attracted by the academic atmosphere of XXXXX, but also impressed by XXXXXXX. I would genuinely appreciate it if I could be given the chance to pursue my studies at XXXX.