Even at 11 years old, I knew that I used computer science in my everyday life, whether I was buying snacks using WeChat Wallet or playing computer games. In my first after-school grade 6 programming class, my teacher taught me how to use C++ to draw a digital picture of a Pikachu (an electric type Pokémon) and change its traditional yellow coloring to baby blue. At that moment, I was fascinated to realize that a few lines of code could create an interesting artistic effect. I became motivated to learn how I could deepen my understanding of coding to pursue even more complex projects.

In 2018, I competed in the senior high school group National Olympiad in Informatics (OI) in Provinces even though I was still in junior high. In the intense OI environment of my secondary education, I spent four hours a day studying college-level algorithms and data structures. I read books like "Fundamentals of C ++ Programming" and "AHA Algorithm" to solve informatics questions on Code Forces (an online programming question bank). I practiced questions regarding Dynamic programming, Bipartite graph matching, and Dijkstra's shortest path with my teammates. I was so interested by the algorithm Dijkstra that I chose my English name after its founder.

I have continued to learn theoretical knowledge and apply programming to my life. I used Python to create a program that can help me recite English words: I inputted my vocabulary into the Balance Tree algorithm, which then ranks words based on how frequently I misspell them, so I can work on the vocabulary I find the most difficult. I also developed a calculator to balance chemical equations based on the Gauss elimination algorithm. I formed my own computer science blog to help others learn from my experience learning algorithms and coding languages. For example, I wrote about a real-life scenario where I used the Dijkstra algorithm to find the shortest path from my home to my school. My goal is for my readers to fully understand algorithms and their practical applications. Because of my innovative examples, my blog has gained 200,000+ views.

When I began high school, I started to take college-level classes on YouTube, Bilibili, and Coursera. I took Machine Learning from Stanford University Professor Andrew Ng, Pytorch Deep learning practice from Professor Hongpu Liu from Hebei University of Technology, and Computer Music from Dartmouth College Professor Gus Xia. After taking these courses, I programmed an AI model that can distinguish the feelings of songs. As the director of the 2020 PGA drama festival, I had to choose a triumphant song to play during a performance of the victory of the Chinese Revolution of 1917. However, I couldn't find suitable music on my Chinese music apps. I decided to input my criteria for a lively, joyful song into my AI model. My model recommended The Burning Legion, a song from World of Warcraft, a song that I would never have thought of on my own.

If AI could understand the feelings of music, can it create music to trigger human emotions? After I researched the basics of how to compose music on YouTube and

Bilibili, I found that AI algorithms could be taught common methods like chord progression and drumbeats. Therefore, I designed the arrangement algorithm and wrote code using C++. I input the main melody of popular songs and their arrangement in the MIDI version. My algorithm created new arrangements based on Jay Chou's (a famous Chinese singer) pop songs. Moving forward, I want to study more complex AI algorithms to generate original music.

During my first year at Washington University in St. Louis, I have fully immersed myself in the world of computer science. I have taken several computer science courses and have excelled in them, receiving an A+ in both. My passion for computer science has driven me to actively write programs, including artificial intelligence applications that can help people play board games. In addition, I have had the opportunity to further my knowledge and help others by serving as a TA for the course CSE247. These experiences have fueled my interest in the field of computer science and I am eager to continue my growth in this area by participating in the REU program. I am confident that this research program will provide me with the opportunities and resources to take my understanding of computer science to the next level, and I am excited to learn from the experienced professionals in this field. I believe that this program will play a critical role in shaping my future career in computer science.