## Statement of Purpose

Starting from 17 years ago, when my family bought the first computer, I was so attracted to this very original machine that I spent all my childhood fiddling with it, letting my toy guns covered with thick dusts. The first time that I tasted the joy computers gave me was in a computer class in elementary school. Our teacher secretly installed a video game in all the machines that we used, and when other classmates were only able to follow instructions and type in the alphabets, I had already have the ability to search the MS-DOS system and play the hidden game. This special skill had gave me admirations from the classmates and great satisfactions, which ignite my passion to computers.

As time passed, I was lucky to get into the best high school with a ranking of top 600 in the city. Because of my interests in mathematics and computer technologies, I joined the Olympiad informatics contest team and tried to learn computer programming by myself. In the three years, I started from basic algorithms such as depth first search, building up my self-learning, researching and document reading skills step by step, as well as trained my teamwork skills during frequent academic communications with teammates. As a turnout, not only did I learned more advanced algorithms, data structures, and programming skills, but also the abilities with time management, requirement interpretation and work allocation during intense contests. Most importantly, these experiences helped me understand that algorithms and data structures are the core elements of computer science.

Unlike most of the undergraduate students in China, I recently granted both my bachelor’s degrees in computer science from George Mason University, Virginia and Southwest Jiaotong University, China via a dual-degree exchange program. In this program, I completed 90 out of 120 credits that the computer science department required in George Mason University in 2 and a half years and was awarded Dean’s List in both semesters in 2013. At George Mason University, because American education emphasize more on practical application than intellectual knowledge, not only did I learned about a number of computer science related concepts and knowledge, but also have extensively acquired the ability to adapt theoretical knowledge to application, which enhanced my research and teamwork skills and laid a solid foundation for my professional career. Besides, I became so adapted to the living and learning environment in the United States that I will not have the obstacles that newcomers usually have. Therefore, I can devote myself into the academic study more easily and quickly.

Noticeably, when students from China realized that in American universities we have complete control of designing and scheduling our own class timesheets, many of them had a hard time figuring out the best schedules or worried about missing the registration deadlines, or even trying to enroll the classes that are taught by professors with high scores on ratemyprofessors.com. I have also had the same experience, except that I solved the problem by developing a software application to automatically generate all the possible class scheduling solutions based on customized user preferences, such as do not take morning classes and condense all the classes into 4 days. To begin with, I created two web crawler programs, one for gathering data related to George Mason University instructors from ratemyprofessors.com, the other for collecting course data from the university website, and yield useful information by analyzing the DOM trees from the data collected. Then I designed an evaluation algorithm using the information from before to calculate the value of a specific timesheet based on the preference given by the users, and run a simple searching algorithm with a few pruning strategies to generate the top schedules. Even though I was unable to release my work to the public for university network security reasons and intellectual property limitations, I enjoyed every minute of the whole process of solving problems.

After graduation, I came to Canada to work for TAC Marketing, a marketing startup company as a software engineer. I learned more clearly that data is essential to the real-world industry. The reality of insurance brokers in Canada nowadays is, in my opinion, under an extremely inefficient condition. Because of the lack of modern technology support, insurance brokers need to manually manage clients’ information, memorize the relationships between hundreds of clients and companies with a large number of policies corresponding to them, and keep track of every day’s agenda either using external software or even notepads. Our team at TAC’s goal was to develop a software application that allows insurance brokers to lighten their burdens and work more efficiently. My part in this project was an automatic suggestion functionality implementation: when the content in a search bar changes, dynamic suggested items will be generated with data matching to search keywords and also needs to be related to the context of what the application is currently displaying. Since the text in the search bar might change frequently, the time efficiency of the generation algorithm is the key to the user experience of this functionality. Therefore, in addition to the normal functionality approach, I found a way to calculate the current context values when the search bar is idling, then integrate these values into the optimization of the database queries. I also found a workaround to increase the time efficiency by realize the fact that users normally ignore the suggestions when the keywords are less than 4 characters, equipped with this fact, I generated the first few suggestions as quickly as possible, then creating a new thread to find more accurate results in the backend and cache them for later use. As the number of characters of the keywords increases, the results are always from the cache. After my approaches, the outcome in the test was quite appealing and I gained appreciation from my team.

During my graduation at George Mason University, the office of international programs and service sent an invitation to my parents. As much as they are thrilled to visit my campus and the United States, they were unable to speak English. So they have had a serious challenge dealing with the flight transitions and almost missed their flight to Washington, DC. So with this thing in mind, when I got back from the U.S., I decided to start a new web service that would help people with the same situation as my parents had. In order to do so, the web service would provide a platform so that users can post their travel plans including their itinerary and a little bit of bounty, and other users who happen to have the same flights can see the requests and offer their help. Moreover, users can also ask for help to deliver small objects if they do not wish to pay the expensive overseas mailing fees.

Over these activities and experiences, I became familiar with more programming methodologies and I am exceptionally attracted to data science technologies. I would like to become an industry expert to bring people convenience in daily life with data-centric technologies, which almost requires me to be a leader of a group of talented people to make it happen. I used to be uncertain of how to approach this goal, until I saw the Master of Computer Science program with a focus on data science at Viterbi School of Engineering, USC. After reading every word on the website, which introduced this program in detail, personally, I thought that this is where I would belong to, because what I had done and what I have passion for – programming, algorithm designing, data management, software performance optimization, and leadership – could be perfectly covered and concluded in this program.

After over 8 years of learning computer science, I have eventually found what I am mostly interested in and I am prepared to devote myself into the area of data science to bring the world more valuables. I would like to support myself to learn the newest computer science theories and technologies through the Master of Computer Science program at University of Southern California. The variety of projects and specialized curriculums in the program strongly attract me. I also believe that I am capable of bringing abundant resources to university’s academic and cultural communications, as well as boost and broaden the development of burgeoning technologies.