

# Statement of Purpose

## I. Georgetown University is Right for Me

During the summer vacation in 2017, I travelled the U.S. and visited Georgetown University for the first time. The visit was love at first sight. I was drawn to the gorgeous architectures and beautiful scenery of Georgetown University. The thought of studying at Georgetown University came to me after the visit. After conducting some research afterwards, I found the M.S. in CS at Georgetown University a great fit for me as I can make full use of my experiences to understand the theories taught in this program. In return, Georgetown University's prestige faculty and wide platform will provide me with the opportunities to study in-depth specialization about this subject. This is why I am motivated to pursue the M.S. in CS at Georgetown University.

## II. I am Right for Georgetown University

I accumulated a fair amount of knowledge during my undergraduate studies and developed many interdisciplinary skills from my experiences in different areas. I believe I am well-qualified for the M.S. in CS at Georgetown University because of my strong will, hands-on skills, and teamwork spirits shown by the following experiences.

**Learning & Competitions** My knowledge of Data Mining mainly derives from my undergraduate courses and academic competitions. In 2019 Mathematical Contest in Modeling, I led my teammates to complete a project about Opioid Crisis. We analyzed the data from National Forensic Laboratory Information System, and found the growth pattern of drug reported quantity and the important demographic features to make a breakouts prediction, *i.e.*, when and where a drug epidemic will occur. Besides, in my final projects in *Introduction to Data Mining* course, I made a prediction for NBA players' salary by analyzing the correlation between their performance and earnings. From these experiences, I become familiar with the process and methods of Data Mining, which could be of great value to the concentration of Prof. Maloof in Data Mining, Prof. Goharian and Singh in Social Mining.

**Research & Publications** Since my sophomore year, I have researched in Inplus Lab and focused on Blockchain technology and its application. I proposed a two-layer Stackelberg Game data trading mechanism in Blockchain-based Internet of Vehicles and evaluated the robustness and efficiency of my algorithms by implementing several smart contracts on Rinkeby, a test net of Ethereum. I completed a paper *Blockchain-Based Digital Goods Trading Mechanism in Internet of Vehicles: A Stackelberg Game Approach* with my colleagues and submitted it to 2020 IEEE Cloud. During this process, I realized that we need to take more factors into consideration to ensure the stability and efficiency of operation in the system. During my research in Inplus, I also participated in *Perishable Digital Goods Trading Mechanism for Blockchain-based Vehicular Network*, *BCShare: A Decentralized Data Storage and Sharing on Blockchain*, and published a survey *Application of Blockchain in IoT Data Trust and Information Available Technology*. The research in Inplus Lab not only helps me to master Blockchain technology, but also deepens my understanding of Distributed Systems, Cryptography, Security and Privacy, *etc.*, which inspires me to explore these topics at Georgetown University.

**Internship** In junior year, I was attracted to Computer Networks, which inspires me to explore other application scenarios, as I realized how powerful and scalable this technology could be. I interned at Microsoft to work on the *Predictable Remote Direct Memory Access (RDMA) for AI Training* project, which aims at guaranteeing bandwidth for Data Manipulation Language training tasks in RDMA networks. In this project, I managed to implement the central logic controller and the adaptive data backup mechanism, *i.e.*, adaptively specifying the traffic classes of VM-pairs to guarantee the users' bandwidth. This experience is align with the research of Prof. Zhou, Burger in Computer Networks, which makes it an ideal choice for my research in the future.

## III. Interests & Goals

If admitted with honor, I am inclined to work on Data Mining, Distributed Systems, Cryptography, and Computer Networks. Upon obtaining my Master degree, I am going to complete my program with excellent performance to broaden my horizon and consolidate my knowledge as my academic goal. Besides, my professional goal is to set up my own company to promote promising products and services to better our lives. In addition, I set being a responsible and reliable man both at work and in life as my personal goal. I firmly believe that I can lay a solid foundation and develop useful skills from M.S. in CS at Georgetown University to achieve my dream.