**Personal Statement**

My grandparent was an engineer who shaped my childhood. When the peer child asked parents to buy remote cars, my toys were just cables, switches, sockets and bulbs. The best thing I enjoyed as a child was watching my grandparents fixing the broken appliances. In primary school, serving as the team leader in the robot team was the first time my interest could be shown off. In middle school, I widely attended science technology competitions as well. I still remember the days when we slept in the laboratory, designing and testing the load-bearing model for the OM competition. In addition to that, I still remember after watching a video of a Tesla coil in a TV show, my friend and I went to the biggest electronic markets to buy transformers, capacitors and other components to make my own Tesla coil. In high school, my interest broader furthermore. I became the leader of the department of the science and technology society. I started to take videos and process them with professional software by self-studying. Besides, I accidentally attended a competition for the Texas Instruments microcontroller due to another candidate was ill. Although I didn’t get any award since there were only three days for me to prepare and I need to learn the C language from the beginning, this competition did give me a clear mind of the hardware and software relations. I studied mechanical engineering in George Fox University at first, but later I found that more and more traditional mechanical parts used to control by complicated hydraulic pipes can be easily replaced by the microcontroller and servo motors which the control data can be easily acquired and further processed. This reminded me of the programming experience for the microcontroller in my high school, which led me to change my major to Electrical and electronic engineering and reapplied to the University of Nottingham.

In the first year at Nottingham, I participated in a project to design a robot car to achieve some advanced functions such as line following by applying OpenCV to cameras and PID control. Besides, there were some other modules like RFID sensor, gyroscope, accelerator as well as a remote controller where powered by Arduinos and a Raspberry Pi. In this project, I did 85% of the programming and hardware designing. Therefore, I realised that programming was the methods and tools for all the engineering subjects. From my perspective, if I could learn more programming skills and applied with my electronic hardware skills, I could have been able to design and to understand electronic items. Thus, I changed my major to Electronic and Computer Engineering in my second year.

During the second year, I involved in the electronic project to design a doppler radar prototype. I was mainly responsible for the hardware and circuit design. For the computing project, we built the software which could visualise and load 3D models by using the VTK library. Yet in that project, I did not play a critical role for my limited skills. Therefore, during Christmas, I self-studied the C++ (during the first year, we only learnt C) to get the basic knowledge of the Object-Oriented Programming and I successfully applied my skills in the second semester. This gave me a clearer mind that the programming is not that hard than I thought. Actually, I was doing pretty good. I furthered my programming skills in the third year through the module called Scalable Cross-Platform Software Design. Moreover, the optional modules called Embedded Computing and Robotics, Dynamics Control will also give me more programing experience for hardware. All these, I believe will lay a solid basis for the courses I have chosen for my master’s degree.

Aside from academic learning and projects, I also plunged myself into various internships. I applied for an internship in China aerospace science and technology cooperation after my first year. During this internship, apart from administration management, I did many technical works. I designed the CanSat for high school students based on stm32 microcontrollers. The CanSat was a small satellite which was mainly for the tutorial. It had the essential function of a real satellite which was equipped with an accelerator, an altimeter, a GPS module, a transmitter and a receiver. Besides, I helped high school students designed a real satellite theoretically. This satellite was a 2U cube satellite which was called Bayi Youngsters' Expedition No.2, and it will be launched by the end of this year. During this project, I was responsible for the telecommunication and attitude control groups. In the telecommunication group, we calculated the SNR and other relevant performance requirements to design the ideal transmitter and receiver. In the attitude control group, we simulated and wrote the programs to test the stability of the satellite by applying the PID control on the momentum wheels.

In this summer, I modified the PID control I created last year and applied it on my homemade rocket. The PID control was used to control the direction of the engine tailpipe, so the heading of the rocked can be changed. The main engine was a 2KG trust pulse jet engine. Besides, there were four solid-propellant rocket engines to provide extra thrust. However, the rocket was out of control shortly after take-off and crashed in three seconds because the trust was unbalanced, and the main engine cannot compensate for this error by changing the direction of engine tailpipe angle, which is controlled by applying the PID control. After this failure, I have a strong interest in the robotics and automatic control and this is the reason why I choose this major in my master’s degree.

Moreover, my final year project is to design an auto-follow suitcase. This auto-follow suitcase will use UWB sensors to follow its owner automatically and avoid obstacles intelligently. In addition to this project, another advanced project called auto-balance bike would utilise the auto-follow system as well as the obstacle avoidance system and the bike, could keep the balance by itself while following the people. Both of those two projects will apply much knowledge about the robotics and control system, which will make me lay a solid basis for my master course.

Nowadays, automation cannot leave robotics and computations. This area of study is widely applied in the life form the toy drones to autonomous vehicles. I believe the MSc Robotics and Computation in UCL will meet the latest industry requirements for its well-established robotics and control theory, well-designed curricula and scientific teaching methods. Thus, I prefer launching my graduate study here. After graduating from the UCL, I will probably join a hardware-based company such as Dji or Siemens instead of an Internet-based company. The hardware knowledge I have learnt will provide me with a new experience in these companies. The course I learnt from UCL will also give me extraordinary skills in system design. Therefore, I believe I can become an all-around talent in the technology area in my career.