**Applied Program: Control and Systems**

My strong interest in the major of Automatic Control traces to a simple but inspiring experiment of the inverted pendulum, which I accomplished as an undergraduate student. The pendulum is a pole attached to a moving cart. Whereas a normal pendulum heads down, an inverted pendulum is an actively balanced standing pole. It may be stabilized by oscillating the support rapidly up and down. If the oscillation is sufficiently strong in terms of its acceleration and amplitude, the inverted pendulum can recover from perturbations in a strikingly counterintuitive manner. I was fascinated by the gadget, though lifeless, but it even could perform such an accurate control of balance that could only be completed by an acrobat in my imagination.

After seven years of studying as an undergraduate and then a graduate student of this discipline, I gradually perceive Automatic Control based on the stage of rational knowledge. The immense application of automatic control systems in the fields of industrial production and social life also further assure my determination of devoting in this domain. Meanwhile, the development of Automatic Control in China is enslaved to many factors, for example, lack of consciousness of combining theories and practices, and backwardness of actual conditions for production and experiment, etc, making China lag behind the western developed countries in this aspect. Therefore, I resolve on applying for admission to x x x University, an institution of international reputation, so as to study classic Automatic Control theories that have a close relationship with production and social life.

In order to substantiate my requisite qualifications for the advanced Ph.D. program at your distinguished university, I would like to refer to the systematic professional trainings received in Electrical Engineering Department of University of xx. My curriculum contains core courses like Fundamentals of Automatic Control, Theory of Linear System, Computer-based Measurement and Control, and Neural Network, etc. I also self-studied two important books by Prof. E. O. Dobelin from Ohio State University—Measurement Systems Application and Design, and Control System Principle and Design. While doing fruitful coursework, I have independently conducted in-depth logical thinking. For instance, in the class of Neural Network, what has triggered my further pondering is that, the complicated control of human beings towards themselves is based on intuition instead of sophisticated models, thus this discipline focuses on simulation and investigation of the mechanism of the human brain.

Furthermore, I have great interest in the basic disciplines such as Mathematics, Physics, and Electronics, that help the learning of Automatic Control theories. The construction of sophisticated mathematical models is dependent on Mathematics, and I have attained “A”s in the final examinations of Advanced Mathematics, Linear Algebra, Numerical Methods, Probability and Statistics, and Stochastic Process. Physics being my strong point, I was a top student in Physical Theories and Physical Experiment. I also performed well in most of the electronic courses. I believe a firm knowledge background will definitely contribute to my future study and research.

As I delved further into my studies, I found my focus on theories hampered my development of hands-on abilities. I had to spend considerably more time on an experiment than average students. To change this, I gave myself extra tasks for practice to improve. I designed the circuits of a radio and independently completed all the steps of welding and testing. I also produced an electronic mosquito-killing device using 555 chips. All my efforts paid off—I was the first to finish all experiment items satisfactorily in the final exam for the Circuit Practice Course!

I have developed my spirit of scientific exploration and innovative capabilities from past experiences. In my graduation project of the undergraduate program, I solved the airplane attitude error problem that can be met when traditional analog fuel quantity indicating system executed sophisticated measurement by adopting software algorithm. The proposed method, which is similar to a virtual instrument, has some extent of practical significance and applicative value to the development of fuel measurement solutions. The thesis concerning this problem, xx, has been published in Journal of xx. In the graduation project of my Master’s program, I creatively applied the object-oriented methodology into the domain of test system, forming the totally new concept of signal-oriented test program development that greatly improved the transferability of test program and the inter-conversion of hardware. The software platform based on this concept has received widespread positive feedbacks from customers. The thesis, xx, will be published soon. During my master’s program, I also had the important experience of participating in development the MIS for xx Grain Bureau in which I constructed the database for the system.

As the saying goes, human beings’ aspiration for challenging their ignorance is the source for the scientific development. After graduation, I have been working with Delphi Automotive Systems, where I am responsible, as product/application engineer, for the technical support of five major categories of sensors in the engine management system—oxygen sensor, coolant temperature sensor, manifold absolute pressure and temperature sensor, crank sensor and cam sensor. My professional experience has allowed me to gain comparative perspectives of the discrepant technological levels between the United States and China in Automatic Control System. At present, China has been unable to produce its own EMS systems and the field is entirely dominated by foreign products. Hence, it is necessary for me to pursue high-level education abroad.

Xx University boasts of a strong scientific research infrastructure, rationalized curriculum design, and well-established academic environment. The Sino-US IC Programming Double Master’s Degree training program, showing close ties between your university and xx, also leads to my particular affections towards your university. Your curriculum emphasizes engineering concepts and designs in the varied and rapidly expanding disciplines within the field of electrical and computer engineering. Students receive the counsel and guidance from faculty, student advisor and graduate coordinator and can choose their elective program centered on their own special interests.

Among a broad range of electives as offered by your Ph.D. program, I am particularly interested in Systems and Control. Specially, I am interested in advanced digital signal and image processing, image-based tracking and guidance systems, control of teleoperated vehicles. With my accumulated knowledge in mathematics, control theory and computer science, I am well-prepared for your challenging program. In my study plan, I will first focus on the learning of Automatic Control theories, such as Control System and Signal Processing; then I will grasp methods that effect control through studying courses like Software Tech, etc, to have an in-depth understanding of complete control systems; last but not the least, I will choose subjects in biomedicine such as biosignal processing, bioelectrical engineering, and medical instrument design and carry out researches to realize the technological application in Biomedical Engineering.

After receiving advanced professional knowledge based on the first-class educational resources and technological advantages in the US, I will come back to China and work with institutions as a teacher. On the effective technological platform of universities and institutions, I will further investigate the professional subjects, and transform technologies into productivities by means of cooperating with enterprises or independently starting up a business, to contribute to the development of Automatic Control Systems in China.