**Applied Program: Electrical Engineering**

From the very outset of my undergraduate program at the Department of Electrical Engineering, XX University, with its galaxy of engineering talents, I have wondered how to be an elite of elites. Now, as I come to the final stage of my program, I have found my answer – a distinguished academic performance, abundant research experience, a broad exposure to latest developments, and the determination to pursue continued excellence, all of which I have succeeded in developing.

Studying in a highly competitive academic environment is often described as “sailing against the current; the failure to advance means falling behind.” This is especially true at XX University. However, as the infallible winner of gold and silver medals in dozens of physics, chemistry and mathematics competitions during middle & high schools, as a member of the Team of XX and then of China National Team, I was well equipped to sail “against the current” and to forge ahead.

My Academic Performance  
I have maintained rounded development throughout my undergraduate program. Academically, I have achieved an overall GPA of 88.78/100. My academic excellence is further testified by the fact that, despite increasing difficulty in coursework, my ranking has kept ascending. My mathematics aptitudes have grown more advanced, with 98 and 99 scores for Calculus (1) (2) and Geometry and Algebra (1) (2) respectively and full marks for 4 compulsory courses. My score for the 3 course projects in Stochastic Processes was among the top 3 in the entire grade.

In terms of my specialty, I have excelled in almost all the courses, particularly in Analogical Electronics, Logic Design and Digital Systems, Signals and Systems, Communication Circuits, Principles of Circuitry, Principles of Modern Communication, Computer Network, with highest scores in some of them. While doing coursework, I participated in our department’s annual electronic devices contest. In two of those contests, I designed and produced Wireless Remote-Controlled Ball-Hitting Electronic Vehicle which, through a department-wide presentation, allowed me to savor the joy of creativity.

How I Carried out my Studies  
Learning through failures is sometimes more effective. While experimenting on Analogical Electronics, I undertook a design project on Distance Detection Through Ultrasonic Waves. PSPICE and EWB simulation software indicated a “perfect” circuit design, but the “perfect” design failed to be realized, with unstable wave patterns and the voltage of some components not agreeing with simulation statistics. This experience taught me that software simulation is not totally trustworthy and every design details must be subjected to rigorous scrutiny.

My research potential is most fully demonstrated in my creative idea in digital image processing, marking my increasing academic maturity. Having read about solving seamless cloning by applying the approach used to work out the discrete possion equation on image processing, I attempted a simulation on this interesting project, though the simulation required a large-scale linear equation system. According to the paper I read, two ways could realize the equation system—Gauss-Seidel iteration and V-cycle Multigrid. Although their temporal complexity was not great, their spatial complexity was considerable. As the internal memory of my computer could not support large-scale matrix operations, I tried designing a locally optimized iteration algorithm to scan each pixel in the image to achieve optimum results. As each optimum value showed decreased overall errors and minimum value, after some iterations, I reduced the variations between any two iterations and obtained an approximation. My approach significantly minimized spatial complexity and ensured ultimate testing of the algorithms. My advisor expressed his ready appreciation for my conceptualization and methodology.

My Extracurricular Input  
Studying at XX University has afforded me special advantages. Besides receiving important interdisciplinary input, I have attended lectures and workshops hosted by world’s leading scholars such as XX by XX, XXby Prof. XX from Yale University, IEICE lecture XX by Prof. XX. I received training launched by Mr. xx, vice president of engineering technology of xx Ltd., on CDMA 2000 Network Planning and CDMA 2000 Speech Network Optimization and participated in the XX. Through those activities, I have been kept informed of the most sophisticated communication technologies.

The honors and awards I have received also indicate my multi-faceted excellence. I won the second prize in the First Departmental Hardware Design Contest, the first prize in the Departmental Innovation Contest by designing the “Agelong” Wireless Long-distance Image Transmission of Micro Camera Shooting Probe (consisting of movement tracking system and movement detecting system), second prize in the 9th Structural Design, SRT (Student Research Training) Best Performance Award, Award for National Mathematical Modeling Competition, Star of Circuit Design conferred by xx Electronics Co., LTD. I have also been winner of various scholarships for academic excellence at both department and university levels.

My Practical Experiences  
By far, my greatest achievements lie in a number of internships and laboratory experiences in which I have managed to acquire useful new knowledge and discover appropriate solutions. Interning at xx Co. Ltd as a team leader, I joined its R & D Group on the SMS of the PHS. By acquainting myself with the technologies of the project, especially the UT Starcom terminals, and applying my knowledge and skills in communication, I helped the group successfully compile the AAA (Authentication /Authorization /Accounting) modules in the FS-PHSMS System. I further proposed the initiation of the “Long-Distance Wireless Data Connection Service” that could exploit the advantages of PHS and WLAN.

Earlier this year, I interned at xx Co., LTD where I compiled the 10-05 Work Procedure Database Software and carried out network optimization and software debugging for mobile communication system. Other internship experiences include working as assistant engineer at xx Center and as research assistant at xx Center of xx University. My most important experience has been working since Sept. 2003 as research assistant at two laboratories based in our university — State Key Lab on Microwave & Digital Communications and Radio Transmission & Personal Communications Laboratory — where I am engaged in 4G hardware platform design and testing.

My Plan for the Future  
Having been exposed to major fields in EE, I am ready for more challenging pursuits. In my proposed program, I plan to focus on optical communication system, optical wireless communication, wireless multimedia transmission, broadband communication, virtual wireless mobile communication system and network, with concentrations on Biomedical Ultrasound and Biomedical Engineering, Signal and Image Processing and Communications, and Integrated Electronics and Computer Engineering. My current research experiences in undertaking Bachelor thesis xx will prove highly relevant.

In matching my backgrounds with an institution in the United States, I find xx my top priority. I have great respect for EECS faculty dedicated to research at the highest level, informed teaching, and the creative desire to excel. EECS faculty represents a broad range of backgrounds while your 9 areas encompass many of my own—Communications; Control, Robotics, & Biosystems; Integrated Circuits; Networks; Optoelectronics and Electromagnetics; and Signal Processing. I would like to identify Prof. x x x, Prof. x x x or Prof. x x x as my potential advisor because my interests bear most closely on any of them.

What I Can Contribute      
If admitted, I will enrich your student community by making contributions in a number of ways. A clarinet player of the University Orchestra, I can perform on various occasions. As vice director of Publicity and Planning Division of University Student Union, I helped launch cultural festivals and sports events. I also served as director of the Science and Technology Publicity Division of the Departmental Science and Technology Association, organizing active learning programs and academic contests and inviting faculty to give regular lectures. I am proud of my voluntary work chair of the 300-member Green Association and as director of China Red Cross xx Branch. In all those events, I have demonstrated my sense of social responsibility.

Through your program, I wish to bring out all my intellectual potential. I am motivated and equipped for fruitful research and I will do so through effective teamwork. In too many course projects, designs and internship practices and extracurricular involvements, close collaborations and interpersonal communications among team members have been essential in the ultimate successes. Therefore I will balance my leadership with my teamwork. Since I have proved myself an elite student in the past, I have every reason to believe that I can develop myself into an elite researcher in the future.