Statement of Purpose

Statement of long-term goals

After pondering over my aptitude, interests, education background and ultimate career aspiration, I decided to pursue a Ph.D. degree in {University of Illinois Urbana-Champaign} in Computer Science, in my field of interest Computer Vision. My long-term goal is to be actively involved with research and teaching in the area that I am interested. A Ph.D. would be the crucial first step towards this goal.

Academic achievements

My undergraduate overall GPA ranked No.3 among 122 students who majored in Electronic and Information Engineering in Harbin Engineering University (HEU). The competitiveness of this major of HEU is ranked No.6 among 461 universities in China by Research Center for China Science Evaluation.

I went to Beijing University of Posts and Telecommunications (BUPT) for my graduate education and majored in the first-level discipline Information and Communication Engineering. This discipline of BUPT ranked No.1 by the China's Ministry of Education. My GPA ranked No.3 in my class of 62 students and I've published 3 papers as the first author and filed 1 patent as the first author during the last two years of study in BUPT. I was awarded the National scholarship for graduate students which only award 56 outstanding graduate students each year among about 2300 graduate students who majored in this discipline in BPUT, the candidates of the scholarship are evaluated comprehensively by their publications, GPAs and other academic activities.

In the last year of my undergraduate, I got the chance to be recommended to graduate study without the entrance exam due to my preeminent GPA. However, the recommendation confined my choice between my university HEU and Northeastern University which is one of 38 universities of 985 projects in China. Since BUPT was my dream university since I was in high school and I believed BUPT can offer me better graduate education and career prospect due to its excellent prestige and its advantage of geographical position, after much deliberation I eventually decided to give up the recommendation and take the graduate entrance exam. The competition of BUPT's graduate entrance exam is extremely fierce partly because the employment rate of its graduate students ranked No.1 in China by the China's Ministry of Education. After three month of hard work for the exam with persistence, methodical plans, appropriate time control, and a heart that hoped for the best and already prepared for the worst, I was finally admitted to Multimedia Technology Lab and advised by the leader of the lab Prof. Aidong Men.

Research Experience

My interest in Computer Vision started from my undergraduate courses of Image Processing and Pattern Recognition. I found it really enjoyable for me to deal with images with programming and algorithms, especially when computer models have some intelligence to understand the images such as the ability to segmentation, classification, recognition, etc.

I did my undergraduate thesis "Automatic image segmentation based on pulse coupling neural network and swarm intelligence optimization" under the guidance of associate professor Hongyuan Gao for four month. I published a journal paper as the second author and filed a patent as the second author during this period. The power of artificial intelligence algorithms in this project really attracts me, and reading and implementing those algorithms brought me great joy. Besides, my advisor's enthusiasm for research and teaching really impressed me and I also want to enjoy that enthusiasm in my future career.

During the first year of my master study at BUPT, I take part in a commercial software development project which aims to inspect screen printed touch panel circuit by machine vision under the guidance of associate professor Bo Yang. This software was expected to reduce 30% man power of inspection for the circuit producing factory. I'm really exhilarated about solving real life problems by programming with the knowledge about computer vision I'd learned. The computers' ability to really substitute human to see and make decisions in this project impressed me deeply and confirmed my determination to study computer science in the future, especially on the topics about computer vision in order to let computers to actually see the world and help people to improve their work efficiency. The leader experience in this project teach me how to communicate with my student cooperators and with the responsible officer and the boss of the company which this software was expected to be sold to, it also teach me how to accomplish a big project by breaking it down to many small blocks of work, and how to assign work to different

people to enhance the efficiency of cooperating development.

My research topic for my master's degree is No-reference Image/Video Quality Assessment which aims to build algorithms can automatically assess the perceptive quality of images or videos without the availability of undistorted images or videos. I had read about 70 papers on this topic and realized more than 10 existing algorithms. Most approaches are based on the training and testing framework which has made me familiar with some machine learning approaches such as convolution neural network, unsupervised feature learning, filter learning, sparse representation, support vector machine, etc. The strong power of machine learning really amazed me and I realized that machine learning is indispensable for computer vision which aims to enhance computers' ability to see. I eagerly hope to explore in the field of computer vision with the help of machine learning during my Ph.D.

Why computer science?

I'm aware that I didn't ever major in computer science, but my majors are closely related with computer science and I have nurtured a strong interest for computer science during my learning. There are some basic computer related courses in my curriculum such as Basis of C Programming Design, Object-oriented Technology and C++ Program, Principle of Microcomputer & Interface Technique, Digital Electrical Technology, and math courses such as Probability Theory & Mathematical Statistics, Matrix Theory and Methods, Abstract algebra and its application. And most my major courses are about mathematics and specific algorithms for communication or multimedia processing. I had also learned Data Structure and Python by myself. I'm learning the Machine Learning with the help of on line course right now. And before my admission to your program, I still have nearly one year to learn basic computer courses and hone my skills of programming. My determination for research in the field of Computer Vision which is a part of Computer Science field is unshakable, since making computers to see and understand the world better would be my lifelong research goal. I will learn any knowledge and try to overcome any obstacles on the way of achieving that goal.

Teaching experience

I had a few high-quality teaching experience as listed in my CV which have honed my skills of speech, preparing the presentation, interacting with my students, etc. I enjoy a lot the process of helping others to understand things and imparting my knowledge to others. Teaching can not only enhance my understanding of a subject, it can also give me inspiration about the subject which is crucial for research.

Summarize(mind set)

Keeping in mind my long-term goals, my immediate goal is to work

towards a Ph.D. in Computer Science. I am aware of the kind of dedication, persistence and resilience required by this task and willing to take on this challenge. I believe that I am adequately prepared for that, both in having the technical qualifications and the right mind-set for doctoral level research. I look forward to joining as a graduate student in your esteemed department and making a significant original contribution to your on-going research work.