

Personal Statement

With achy shoulders and back, I felt a little dizzy and very sleepy, but the excitement and sense of fulfillment drove me to soldier through 70 hours of research work.

That was what I had in my mind on the late night of December 31, 2009 when I finally caught up with my thesis proposal submission deadline. Not being a person who likes to do things at the last minute, I was being tested as a researcher in terms of my perseverance and flexibility. I had selected the implementation of FPGA CAD software as the focus of my thesis project. However, when I found out all the required functions had already been implemented by commercial software, the original proposal became pointless. Thus, I had to orient myself to a new direction of research within less than a week.

I like such challenges, which force me to use rationality, calmness and proactive work. The exploratory journey was painstaking, I must admit. I had previously been involved in a project that built an FPGA simulator for a multi core processor that supports Thread Level Speculation (TLS) schemes. Tracing that research experience, I took the aspects to be furthered as the motivation for my research thesis proposal: TLS performance is crippled by frequent squashes and therefore maintains plenty of room for improvement. Based on my extensive literature review, which revealed that optimization works had already exhausted all possible solutions, I figured out a new framework inspired by the previous experiences involving modeling interconnect modules for the simulator. Interconnection could be a reasonable factor attributing to overall performance while there were few existing optimization plans that have taken it into consideration. Why not give it a shot from this angle? Following this path, I designed and implemented the initial experiment. Five days of high-quality and stressful work brought me rewarding results: the theme of optimizing TLS performance via a priority-based interconnects approach was established and approved by my advisor as a new theme with a preliminary demonstration of its feasibility and potential for optimization. I submitted the research proposal just in time. The experience had turned out to be unforgettable encouragement for my future career development in academia.

As we know, research is indeed full of small and large achievements and accompanying joys; but one must also admit that research is also confronted with obstacles or failures, which is not a bad thing if one regards them as challenges leading to ultimate success. Among all the things relevant to a research career, its challenging and stressful nature filled with busyness and contribution to scientific development and overall social progress is the thing that I cherish most. This is not only a career that makes me feel appreciated, but also a journey that makes me stronger and more sensitive to the fundamentals that improve our ways of living and working.

Upon completing work on TLS performance optimization in September 2010, I joined in a research project regarding the promotion policy of the shared cache in CMP. During the process, I designed and ran a great number of experiments with different workload configurations to comprehensively evaluate our cache promotion policy which

is based on the Reuse-Distance Information. Meanwhile, through heated discussions with group members and inspired by the paper regarding Dynamic Set Sampling (DSS) scheme authored by ABC XYZ et al., I modified the sampling mechanism/strategy adopted at the beginning of the research and managed to reduce the overly high hardware complexity on the basis of equal accuracy.

I have greatly tempered my research aptitude, experimental design and analytical skills with a higher awareness of team spirit. A deeper understanding of Cache promotion policy was also noteworthy, producing one paper entitled “ABCDEFGH” accepted by a peer-reviewed conference. The passion I discovered, the ability I gained to handle stress and frustration with proper reasoning and systematic review and the quick learning I demonstrated during my research work have convinced me that I would be a productive and contributive researcher in the future.

I also embrace an interest in computer architecture, partially because I attended a lecture on “XYZ in Computers and Distributed Systems” presented by Professor Si Li from Ohio State University. In the future, after my Ph.D. studies, I still want to be involved in this academic area of computer architecture, hold a faculty position if possible and work with several hot research topics I have developed myself.

During the past three years, I have received rigorous training in computer architecture and conducted research in the sub-fields of multithread architecture and shared cache management. Now it is high time for me to apply to the PhD program, during the process of which I will continue to utilize my solid academic background and explore the graceful and effective designs and concepts lying in both current and future computer architecture and systems. By solving the problems plaguing academia and industry in terms of multi-core platforms, I will become a helping hand in the progress of ***.

*** University is my dream destination for advanced study in my field of interest. Professor A is now leading a cutting edge research initiative in *** which perfectly matches my background. Their immense contributions and integrated attitude toward work have set up a role model that encourages and inspires me. If I am admitted, I believe, with my solid academic and research background, I will not only survive but also thrive in your graduate program and make great contributions to the school and this industry after graduation.