Why Graduate School?

I remember the day as if it were yesterday. I was just about to finish my eighth standard examinations, when I got hold of a book on C. Sometime later, I chanced upon an article on this new thing called GNU/Linux whose source code was available for everyone. I wanted to do something 'real', and this was it.

Ten years have passed and I am still intrigued by operating systems and compilers. The intrigue growing with every increment of knowledge about them.

Throughout my school days programming had been more than just a hobby and securing an nationwide first position in computer science in the Academic Aptitude and Achievement Tests held by the Council for the Indian School Certificate Examinations bears testimony to that. I understood that I wanted to delve deeper into the subject and engineering became a natural career choice.

My years as an undergraduate student made me appreciate the basic challenges, and equip myself with the basic skills to meet them. Among all the subjects, I enjoyed the course on operating system concepts the most, where I obtained the highest marks in my class. I realized that computer science had little to do with computers, but was more about designing elegant solutions to complex problems; and that the drawing board was a more powerful tool than the keyboard.

As a member of the technical staff of Interra Systems, which specializes in EDA products, I get to exercise my skills every day to meet pressing demands and build products designed to work under stressful conditions with terrabytes of data.

I am interested in the study of compilers and operating systems, and the associated data structural, algorithmic and software engineering challenges that need to be met in order to design such sophisticated systems. I am eager to solve more complex problems. For example, adapting our existing paradigms to fit in with tomorrow's world that would be dominated by multi-core processors demanding a high degree of parallelism and demand significant shifts in the way we look at problem-solving.

Further formal education is, therefore, the next step that I am planning to take to further my goals.

Why I might be eligible?

My record as an employee at Interra is a good indication of my abilities. Here I won accolades for tackling problems involving a sophisticated user interface, and the core data traversal modules during the development of Mirus3G. I learnt about serialization and de-serialization of object models; aspects of compiler optimization; and the significance of differing memory layouts, activation frame formats and calling conventions across various platforms from the view-point of a compiler and an application programmer. This is directly in line with my desire to obtain specialized training in compilers and operating systems.

My selection in the Google Summer of Code programme for students in 2007 was a peak in my career. There I worked with the Fedora Project to develop a tool to enable users without Internet access to

update their systems using service packs. I was mentored by engineers from Red Hat and sponsored by Google. Today I am one of the top fifty package maintainers at Fedora and daily co-ordinate with a team of highly motivated individuals who make sure that the system components are well-oiled and the user experience as good as possible.

While working on GNU Parted, I came in close contact with disk partitions, file systems and learnt how to write portable programs. I would take pride in saying that my implementation of route for Netutils is the first attempt at a truly portable implementation of this popular utility. The existing ones in Solaris, GNU/Linux, NetBSD, and FreeBSD differ widely in their functionality and interfaces. After my work with Netutils' route, it would be possible to address FreeBSD's priority task of making GNOME's NetworkManager portable, which will enhance the usability of GNOME on desktops and laptops running FreeBSD.

Working with a diverse group of people from all parts of the globe, that makes up the Fedora and GNU communities, many of whom I have not met in person, has been a learning curve and culturally enriching experience for me. I hope to draw upon these experiences, while interacting with the diverse community of people that I am looking forward to in the university campus.

Of late I have started working with my teacher, Mr. Kumar Sambhav Pandey, to develop a C compiler for a new class of Computer Architecture based on Kahn Process Networks. In this process, I have studied a production retargetable C compiler -- LCC. This novel processor architecture has a different programming paradigm and therefore the work is much more in depth than simply porting LCC for a new machine.

I am sure this makes me a good candidate to pursue a Master's programme in related domains.

Where do I see myself in future?

I see myself pursuing problems in the fields of operating systems and compilers, particularly those that are designed for today's multi-core processors that are to be seen everywhere. OpenMP is one such area that comes to my mind. Doing a PhD. after completing my masters is also in the pipeline.

Later on, I would like to take up a faculty position in the academia or a research position in the industry because they seem to provide the ideal mix of freedom and challenge that would act as my launch pad for chasing the dream of becoming a giant one day.