
Statement of Purpose

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During my studies (double major Computer Science / Genetics) in the University of Bielefeld's Faculty of Technology, I discovered my interest in research in applied computer science. I became deeply involved in particular in the following five projects:

1. Robotics: Together with students from the psychology and electronics departments I built an autonomous robot for tactile exploration of unknown topographical areas (of course it only ran over a few lumps on the floor of our lab:-). This robot was demonstrated at the 19th German Artificial Intelligence Conference (KI'95) in 1995: (ref: KISTE).
2. Automated verification: As an assistant to Prof. Peter Ladkin, I installed and maintained the EVES theorem Prover from ORA Canada for use in verification with the Temporal Logic of Actions (TLA).
3. Computer-related incident and accident analysis. Together with other interested students, I used Prof. Ladkin's WB-Graph method to analyse some computer-related accidents in commercial aviation (refs: Cali, AMAST, Forschungsbericht). I also searched for suitable graph-drawing tools that could be used to support the WB-Method and used daVinci before settling on the dot tools in Graphviz from AT&T Research.
4. Computer-based sequence analysis. In several seminars I worked on DNA/RNA and protein sequence analysis as well as secondary structure prediction. I am currently deciding on 'Diplom' thesis work; either about the Shortest Common Superstring problem or about the WB-Graph method.

I also obtained practical experience in the following two areas:

- Practical Network Support: My second task during the assistantship with Prof. Ladkin was to plan, install and maintain the group's Solaris-based computer network (which also includes Linux and Windows NT machines) together with two other assistants. I was personally responsible for email/Sendmail, NTP, Emacs, document processing tools (TeX, LaTeX, Postscript/ghostview), and the C compiler. General responsibilities with other assistants included daily maintenance, security, trouble-shooting and service recovery, and WWW-server administration. Our network runs very well!
- as an IBM Work-Study fellow at IBM Germany's service center in Stuttgart, working on a major DB2 database development project.

Since my studies have been successful, I want to stay in and have fun doing research. I am therefore looking at Ph.D. work starting in January 1998 after my Diplom thesis is finished. Talks with friends who are PhD candidates in Germany as

well as Prof. Peter Ladkin, who has Master's and Ph.D. degrees from the University of California at Berkeley, and Prof. Robert Giegerich have given me an insight into how much more effective PhD studies in the US could be for my style of working than continuing in Germany. I am a social person and have achieved a lot in the context of group work.

Both the computing equipment support and the level of educational care at the Ph.D. level in the US in the fields in which I am interested appear to be superior to those available in Germany. On a general level, studying continues at the graduate level in special graduate courses at United States universities. This is almost unheard-of in Germany -- Ph.D. candidates are expected to have completed their 'studies' with the Diplom, and they have a 'job', during which they are expected to perform their research, and they work on this job mostly on their own. Yet science is a continual learning process, and in my opinion requires continuing education in seminars and courses, probably throughout one's entire scientific career!

I also think that, socially, living in another country for a while would be a great adventure and a unique experience. I already worked in Canada for almost a year. I liked the 'Western' openness and way of life and would love to have the opportunity for more. Moreover, it is my opinion that a scientist in particular needs to get to know different professional cultures and to be able to use different working styles in order to reach his or her full potential in research. Individual cultures have their own priorities and, if one may say it, obsessions, and it's sometimes necessary to step outside a particular culture in order to be able to solve a problem. This becomes obvious within subjects (for example in my accident-analysis and robotics work, which involved synthesis of very different working areas) as well as on the more general cultural level. Pursuing graduate studies in the US would be the ideal way to develop the perspective I need.

Because the Faculty of Technology at the University of Bielefeld maintains scientific contact with the Department of Computer Science at the University of Arizona in one of my areas of interest, computational biology, Arizona is a natural choice for me for potential graduate work.

I already talked to Gene Myers when he visited Bielefeld. I had a good impression of the research environment of the University of Arizona.