

## Statement of Purpose – 1

I am applying to Stanford for admission to the Ph.D. program in Computer Science. I am interested in Theoretical Computer Science, particularly in the Design and Analysis of Approximation Algorithms, Combinatory and Complexity Theory.

My interest in Mathematics goes back to the time I was at school. This interest has only grown through my years in school and high school, as I have learnt more and more about the subject. Having represented India at the International Mathematical Olympiads on two occasions, I have been exposed to elements of Discrete Mathematics, particularly Combinatory and Graph Theory, outside the regular school curriculum at an early stage. The intensive training programs we were put through for the Olympiads have given me a lot of confidence in dealing with abstract mathematical problems.

My exposure to Computer Science began after I entered the \*\*\*\*. The excellent facilities, courses and faculty have given me a firm background of the fundamentals in Computer Science. Having been exposed to the various facets of Computer Science in the course of my undergraduate studies, I have found Theoretical Computer Science most intellectually satisfying and stimulating. Courses like 'Discrete Structures', 'Data Structures and Algorithms', 'Theory of Computation' and 'Algorithms and Complexity' have been my firm favorites. I find the problems in Theoretical Computer Science particularly appealing because of the flavor of abstract mathematics that I love so much. At the same time, the problems in this field have a concrete basis, originating from practical problems in Computer Science. This adds to their appeal.

Recently, a lot of exciting developments have taken place in the field of approximation algorithms. The Markov chain approach and the primal/dual approach have emerged as powerful techniques for the development of approximation algorithms. More recently, semi-definite programming has been used to obtain approximation algorithms for Optimization problems. An interesting connection with results in Interactive Proof Systems has yielded lower bounds on the approximability of various problems. I believe that these methods have a lot of potential. Members of the faculty at Stanford have done a lot of the pioneering work in these areas. Prof.YYY has been involved in the work on Interactive Proof Systems and semi-definite programming. I have read about these results in the course of my seminar (Junior Thesis), my summer training at the Tata Institute of Fundamental Research (TIFR), Bombay, and my B.Tech. Project (Senior Thesis). I find them very fascinating and intend to work with problems of a similar flavor.

I am convinced that I should pursue a career in research and teaching. For me, problem solving is an exhilarating experience, unequaled by anything else. It would be immensely gratifying for me to be able to contribute something to the understanding of a subject that has given me so much pleasure and joy. It would also be wonderful to have the opportunity to share with others that

feeling of pleasure and joy, through teaching. My few experiences with teaching, as a tutor for an undergraduate course and as a lecturer in student workshops, have evoked favorable responses and have been thoroughly enjoyable. I believe that I have the capacity to make the commitment and accept the challenges that a career in research involves. I am confident that I have the requisite aptitude, exposure and motivation to make a meaningful contribution to my chosen field.

My summer training at TIFR has given me the experience of working in an organization oriented towards research. In the course of the two months I spent there, my interaction with the Theoretical Computer Science group has taught me a lot of things and also whets my appetite for more knowledge. I realize how important it is, as a researcher, to interact with other people working in the same field, and at the same time, am able to work individually.

A good research career can only be built above the firm foundation of a good education. With my long-term goal in mind, my immediate objective is to work towards a Ph.D. in Computer Science. Having done my undergraduate studies at undoubtedly one of the best undergraduate institutions in India, I would consider it my privilege to be able to pursue my doctoral studies at Stanford and avail of the excellent infrastructure facilities and research opportunities it has to offer. I am sure that the stimulating academic environment and interaction with the distinguished faculty at Stanford will prove immensely fruitful and facilitate my development as an individual Researcher in my field. I feel that Stanford has a lot to offer me, and at the same time, I am confident that I would be able to make a positive contribution to on going research work at Stanford University.

Having decided that I will engage in the pursuit of a career in research, I am fully aware of the implications. I am aware of the kind of dedication, resilience and resolve that it calls for. I feel that I am adequately prepared, both in having the technical qualifications, and in having the right mind-set for doctoral level Research work. I look forward to a long and mutually beneficial relationship with Stanford University.

### **Statement of Purpose 2**

My objective for graduate studies in Computer Science is to prepare myself for the long-term goal of pursuing a career of teaching and research. I have nurtured a strong passion to become a scientist and pursue research. In the pursuit of Knowledge, I have always adopted a rigorous approach in order to attain an in-depth understanding of the subject at hand. This has amply reflected in my consistently brilliant career, always topping the class and having received numerous national level awards. With a GPA of 9.72, I am ranked first at the \*\*\* among nearly 350 students.

I have been involved in research in parallel and distributed computing systems. I studied various problems in distributed systems and distributed databases including deadlock detection and resolution, termination detection, distributed snapshots and consistency. I have been attracted towards the field of

correctness of parallel programs. I published a Technical Report reporting errors in two published deadlock detection algorithms and highlight their underlying deficiencies with respect to the distributed nature of computation. I am also involved in the development of an optimizer generator, which would automate the process of writing optimizers based on the specifications of the optimizations. I am currently engaged in writing a paper on an efficient algorithm for performing global data-flow analysis. The new algorithm that I have developed utilizes the notion of backward information flow to perform propagation using work-lists in an efficient manner. I have been in correspondence with Prof. yyyy about my algorithm and other aspects of the problem.

I have chosen to pursue graduate studies at Stanford University because by working under the guidance of the distinguished researchers I am confident of making an original contribution in the field of Computer Science. My interest in research has burgeoned during my undergraduate studies at \*\*\*. I have excelled in our well-rounded and exacting undergraduate program and have developed a solid background to take up research in Computer Science.

I have decided to go in for graduate studies which calls for a personal commitment to the fulfilling craft of independent research and that involves willingly making personal sacrifices of time, leisure and immediate reward. In turn I shall get intellectual satisfaction and the gratification of becoming a contributor to knowledge through research and the greater personal rewards of learning and discovery. I believe that I possess the motivation, intellectual ability and preparation to set out on this exhilarating and arduous path and to make significant original contributions to your on-going research work.

I look forward to joining Stanford University as a graduate student at your esteemed department.

### **Statement of Purpose 3**

#### **GOALS**

I am applying to Princeton University for admission to the Ph.D. program in (Computer Science}. My research interests lie in the field of Theoretical Computer Science. More specifically, I am interested in the Design and Analysis of Algebraic, Combinatorial and Number Theoretic Algorithms as well as their applications. Other areas that interest me are Theory of Computation, Complexity Theory and Geometric Algorithms.

My long-term goal is to be actively involved with research and teaching in an area that I love. I look forward to such an involvement as a faculty member at a reputed university. A Ph.D. in one of the aforementioned areas would be the crucial first step towards this goal.

#### **PERSONAL-BACKGROUND**

Both my parents have done their Ph.D.'s in Mathematics and my father is an active researcher in Applied Mathematics. This had inculcated in me a love for Mathematics right from my school days. On the other hand, I entered school in the same year in which the "personal computer revolution" began in India;

therefore I have, in some sense, “grown up with computers”. My interest in Theoretical Computer Science is the combined result of these two influences.

### **MATHS-BACKGROUND**

While in high school, I was involved with the Mathematical Olympiad program and this culminated in my being awarded a silver medal at the 34<sup>th</sup> International Mathematical Olympiad. As a result of this involvement, I was exposed to basic Combinatory, Graph Theory and Number Theory at an early age. Moreover, the intensive training-cum-selection program I underwent has honed my skills and bolstered my confidence in problem solving. It has also whetted my appetite for problem solving and made me a regular reader of the Problem sections of periodicals like American Mathematical Monthly and Mathematics Magazine.

I was chosen, by the National Board of Higher Mathematics, as one of 18 undergraduates all over India to participate in their nurture program, in parallel with my formal undergraduate training. The resulting three-year-long interaction with the School of Mathematics of the prestigious Tata Institute of Fundamental Research (TIFR), has given me a substantial background in advanced mathematics (including Group, Ring and Field Theory, Linear Algebra, Real and Complex Analysis, Measure Theory and Topology). As part of this year's program, I am studying Commutative Algebra, Algebraic Number Theory and Functional Analysis.

I hope to put my mathematical background to good use in my research work.

### **CS-BACKGROUND**

I am currently a senior undergraduate student of the \*\*\*\* majoring in Computer Science and Engineering. I had chosen this department for its academically stimulating atmosphere, excellent faculty and broad spectrum of courses, many of which have a strong mathematical flavor.

Now, having acquired a firm foundation in the various areas of Computer Science, I am sure that my forte is Theoretical Computer Science. I find that my motivation, as well as my aptitude, is the strongest in this field: I have secured the highest possible grade (AA) in all the five theory courses that I have taken at \*\*\*\* namely, Discrete Structures, Data Structures and Algorithms, Design and Analysis of Algorithms, Theory of Computation} and Operations Research.

I have further enhanced my Theory background by opting for theoretical topics in my

{Seminar} (junior thesis) and my {B.Tech.\Project} (senior thesis). The former involved studies in Commutative Algebra and Computational Algebra, while the latter has involved Combinatorial Algorithms, Graph Theory and Randomized Algorithms and will soon involve Approximation Algorithms and applications of graph partitioning to VLSI design.

### **RESEARCH-PLANS**

I find Algorithms and Complexity theory the most appealing areas of Computer Science because of their many beautiful results together with their numerous

applications to real-life problems in Databases, Operating Systems, Graphics, Compilers and so on. I am fascinated with the enormous potential for research in these areas which has been revealed to me in my {Seminar} and {B.Tech\project} and that is what I envisage myself doing a decade from now. Since problem solving is the most enjoyable and rewarding experience I have ever known, and since it is an integral part of a career in research and teaching in Theoretical Computer Science, I am convinced that such a career is the right choice for me. I am eager to contribute something to a subject that has given me so much joy. I am also enthusiastic about being involved in its teaching, as teaching a subject enhances one's own understanding of it.

### **WHY-THIS-UNIV**

Princeton University has one of the world's very best Theoretical Computer Science groups. An opportunity to interact with this group would be a golden one for any budding theoretician.

From a careful study of the department's brochures and the advice of the faculty at \*\*\*\*, I have realized that Princeton can provide me with a perfect environment for directing my mental resources towards independent research. I am confident of meeting the high standards of Princeton; my active involvement and enthusiasm in my undergraduate studies, which is amply reflected in my being ranked {first in the institute}, should serve as proof of my possessing the necessary qualities.

### **CONCLUDING**

Keeping in mind my long-term goals, my immediate objective is to work towards a Ph.D. in Computer Science. I am aware of the kind of dedication, perseverance and resolve I need to have for a fruitful career in research and teaching. I believe my background has not only qualified me technically but also given me the right mind-set for such a career.

I look forward to joining as a graduate student in your department and having a long and mutually profitable association with Princeton University.

### **Statement of Purpose 4**

#### **Statement of long-term goals**

After carefully considering my aptitude, interests, the nature of my training and my ultimate professional ambition, I have decided to pursue a {Doctoral degree} in Computer Science, in my fields of interest {Computer Graphics} and {Computational Geometry}, ultimately leading to a career in teaching and research. As a Statement of purpose of my graduate study, I describe here my academic background, research interests and career goals.

#### **Academic achievements**

I have excelled in academics at every stage of my education. In the twelve years of my schooling, I have always been ranked first or second in my class. I stood \$111<sup>th</sup> out of 100,000 candidates in the highly competitive examination for admission to the undergraduate program at the \*\*\*\*. In the Regional Mathematics Olympiad 1990, I was ranked 6<sup>th</sup> in my home state of Maharashtra.

**Brief description of field of study**

The excellent undergraduate program at the \*\*\* not only provided me with a strong foundation of Computer Science fundamentals, but also exposed me to various fields of Computer Science. I have always been interested in problems involving visualization. At \*\*\*, this led to an inclination towards Computer Graphics and Computational Geometry. I substantiated my knowledge in these areas by choosing graduate level electives in Advanced Computer Graphics and Geometric Algorithms. I am currently working on my yearlong B.Tech Project (senior thesis) titled {Triangulations in 3 Dimensions}, under the guidance of Dr. yyy. In this thesis we are looking at decompositions of polyhedral into surplices with an emphasis on obtaining well shaped tetrahedral.

**Seminar**

I am also interested in Multimedia technology. In my third year, I presented a home paper titled {Multimedia Databases} under the guidance of Dr. yyy. In this paper, our study was focused on issues involved in the storage and real time retrieval of multimedia objects in a multi-user environment.

**Teaching and work experience**

My years at \*\*\*\* have given me substantial teaching experience. I have delivered lectures at Workshops on Unix conducted by the department and have been a teaching assistant for an introductory course in programming. This has built in me a lot of

Confidence that is required to excel as a teacher.

**Experience in field of study**

Though my experiences in \*\*\*\* have provided me with a strong foundation in my fields of interest, a good graduate program is necessary not only to increase my knowledge in these fields but also to mould me into a good researcher. I am fully aware of the hard work and perseverance required for a successful career in research and I believe that I have the aptitude and drive to meet the challenge.

**University paragraph**

The Graduate program at SUNY, Stony Brook is fully suited to my goals. Graphics and Computational Geometry are strong areas of research at Stony Brook. I have found the faculty and the research work to be quite impressive. I feel that to be associated with this group would stand me in good stead throughout my research career. I have also been impressed by the computing facilities available at Stony Brook for research and education. My B.Tech Project advisor has also strongly encouraged me to apply to your program. I am confident that given the opportunity, I will be able to make significant Contributions to the on going research at Stony Brook.

I corresponded with Prof.yyy whose encouraging reply reinforced my decision to apply to Stony Brook.

I look forward to joining SUNY, Stony Brook as a graduate student at your esteemed department.

## **STATEMENT OF PURPOSE 5**

It is after a good deal of self-evaluation that I have decided to pursue graduate studies in Computer Science leading to a doctorate. This decision followed naturally after carefully considering my academic background, the areas of my interest, and my ultimate professional ambition, which is to pursue a research career, either as a teaching faculty member, or in an R & D department of the industry.

My undergraduate education at \*\*\* has provided me with a strong and comprehensive background in Computer Science. The curriculum included all the basic courses such as Data Structures and Algorithms, Discrete Structures, Computer Organization and Design, Systems Programming, Theory of Computation, etc.

I had always been fascinated by the field of Artificial Intelligence, which is why I chose the topic of "Human and Artificial Intelligence" for my junior thesis. The literature survey that this entailed exposed me to the fundamental concepts, as also the research work in progress, in the various domains of Artificial Intelligence I concentrated on issues involved in Natural Language Processing and Knowledge Representation.

My B. Tech. project (senior thesis) is "Word Recognition, Spell Checking and Correction using ART-based neural networks". We are investigating the use of neural networks, configured under the Adaptive Resonance Theory paradigm, for the task of detecting spelling mistakes in English text and generating good suggestions for incorrectly spelled words. This guided independent work has given me a good understanding of the theoretical, experimental and computational skills required in Computer Science.

I have been a teaching assistant for the introductory course "Computer Programming and Utilization" conducted by Prof. yyy of the Computer Science department. I have also helped in organizing, and given a lecture on the "VI" editor, during the UNIX workshop conducted by the Computer Science and Engineering Association of our Department.

There are two reasons why I believe that graduate study in a reputed department, such as yours, is important for a person aspiring for a research career. Firstly, working for a thesis under the guidance of an expert whose work can serve as a model is the most effective method of transforming a student into a largely independent researcher making significant original contributions. Secondly, the emphasis of graduate study on intensive and independent study of a specialized area is an ideal way of making a student capable of reaching the frontiers of knowledge in a subfield quickly and keeping abreast of the latest developments.

I feel that with its comprehensive facilities and competent faculty doing quality research work in the field of Artificial Intelligence will be the ideal place for me to pursue graduate studies. The working atmosphere of a vigorously active department will be helpful in motivating me towards excellence.

In short, I believe that a good graduate program is an essential step for realizing my professional ambition of becoming a competent researcher. I also believe that I possess the motivation, intellectual ability and preparation to do justice to a demanding graduate program. My excellent undergraduate record and my high GRE scores are testimony to that.

I, therefore, look forward to joining your department as a graduate student.

## **STATEMENT OF PURPOSE 6**

### **Long Term Goals**

My undergraduate training in the Department of Computer Science and Engineering at the \*\*\*\* has exposed me to a stimulating academic environment where learning and research go hand-in-hand. Through the many opportunities I have had here, I have found that I have a deep interest in research work and a strong aptitude for the type of problem solving and problem discovery that it involves. I have, therefore, decided to pursue active research in Computer Science as a career.

### **Areas of Interest**

Of the many fields in the Computer Science spectrum, I am especially interested in Computer Systems. Within this field, I am interested in computer networks, distributed systems, operating systems and distributed operating systems. My junior seminar work, my practical training and my courses have given me plenty of exposure to these areas and I feel that I have sufficient motivation and aptitude to work in this field.

I am also interested in Programming Language design and Programming Systems. I have worked in these areas in my summer project at TIFR and in my ongoing B. Tech. project. I would like to continue to learn about these areas in my graduate program.

### **Immediate Goals**

I plan to work towards a Ph. D. program with a focus on Distributed and Parallel operating Systems. I would also like to follow up my interests in Computer Networks, Distributed Systems, Operating Systems and Programming Languages through my course work. I feel that this should be my next step on my road to a research career in Computer Science.

### **Why Duke?**

I have selected Duke as the place for me to continue with my education because I found that the Graduate Program in Computer Science suited my needs perfectly. I have found the Duke Computer Science Department faculty and the research being carried out in Computer Systems, especially in Distributed Operating Systems, to be very impressive. I feel that to be associated with this group for the many years of my Ph. D. would stand me in good stead for my research career. I have also been impressed by the computing facilities available at Duke for research and education. These are much superior to those available to a graduate student in India. Taking all these factors into account, I feel that Duke is the perfect place for my graduate



studies and I am confident that I will make a positive contribution to the ongoing research work at Duke.

### **Am I Prepared?**

My undergraduate preparation at the Computer Science and Engineering Department of the \*\*\*\* has given me a very substantial knowledge of the basic areas of Computer Science. Through my junior seminar work, I have acquired a good knowledge of distributed operating systems and the problems they entail. It also exposed me to the broad fields of computer networks, distributed systems and operating systems. I have also been exposed to practical computer networks and network programming in the course of my practical training at the State Bank of India, Head Office. My course projects have given me plenty of experience in programming using various programming languages, software packages and operating systems. I have selected {Introduction to Computer Networks} as an elective course in the seventh semester so as to broaden my knowledge in this area. Therefore, I feel confident that I have acquired both a broad base in Computer Science and a strong foundation in Computer Systems.

### **Summing Up**

I am aware of the hard work and perseverance necessary for research work and I know that it is not always as exciting as the published results seem to indicate. Nevertheless, I am sure that my aptitude and drive will see me through the challenge. I hope to have a long and mutually profitable association with Duke.

### **STATEMENT OF PURPOSE 7**

I, am a senior student of the Bachelor of Technology program in Computer Science and Engineering at the \*\*\*\*. I am applying for graduate studies in Computer Science leading to a Ph.D. I see this as a first step towards achieving my career objective of research in an academic environment.

### **Academic Background**

I have excelled in academics right from my school days. In school, I consistently used to secure one of the top positions in the class. In my twelfth standard examinations, I was placed in the merit position at an All India level. I have always been attracted towards subjects that draw upon one's analytical abilities. Thus, Mathematics and Physics were my favorite subjects. I was placed among the top 1% of the candidates who appeared for the National Search Examination in Physics all over India. Later, I secured the 97th position among the 80,000 candidates who appeared throughout India for the Joint Entrance Examination. This examination is conducted by the \*\*\* the premier engineering institutions of India, for selecting the best of Indian talent.

### **Computer Science Background**

The undergraduate program at \*\*\* aims to strike a balance between the theoretical as well as the practical aspects of Computer Science. This has given me a sound understanding of the fundamentals at both the theoretical as well as practical levels.

I have performed reasonably well in my undergraduate courses at \*\*\*, but since \*\*\* admits only the best students throughout the country, I believe, in view of the competitive atmosphere, that the grades secured should not be considered in an absolute sense.

During the course of the B.Tech. program I have developed a keen interest in the fields of Computer Graphics, Algorithms and Operating Systems. At present I am working under the guidance of Dr.yyy on my home paper titled {Physically Based Modeling}. As a junior, I had presented a seminar on {Associative–Commutative Matching and Unification}. I have included a brief summary of both these separately

### **Purpose of Doctoral Study and Career Goals**

During the course of my education at \*\*\*, I have realized and felt convinced that my true liking and aptitude lies in research and teaching. Research and teaching go hand in hand. Teaching gives one a sense of constructive participation in the education Process. Research enables a person to stay in touch with the latest advances, while making one's own contributions to the field. I have also had a good deal of teaching experience as an undergraduate teaching assistant during my junior year for the freshman course {Computer Programming and Utilization}. I have included a brief description of this and relevant certificates to substantiate my claim.

I believe that graduate education is not merely a continuation of college studies. I think that graduate education is process, in which the student learns how to do independent research.

My decision to apply to UNIV is based on a careful examination of the department bulletin and the research interests of the faculty members. I have contacted PROF, who has encouraged me to apply. I would really love working under his guidance for my PhD's believe that graduate education at your University will enhance my knowledge, give me wide exposure and develop my abilities to do independent research. I consider myself an enthusiastic and hardworking person, and I am sure that my stay your university will be a very fruitful one.

### **STATEMENT OF PURPOSE 8**

#### **My goals**

I am applying to the PhD program in Computer Science at Brown University. After considering my aptitude and the type of work that I enjoy most, I am convinced that I want to take up a career in research in Computer Science. A PhD is just one step towards realizing this goal.

#### **My preparation for the same**

My formal introduction to Computer Science began at \*\*\*. Under its excellent faculty, I got exposed to the entire spectrum of Computer Science. In an environment that is intensely competitive, and where research goes hand-in-hand with learning, I also got a lot of drill in both theoretical research work and implementation, thus laying a sound foundation for graduate study.

My academic and co-curricular record has been consistently good. Throughout school as well as now, I have been at or near the top of my class. I have listed some of my achievements, on the attached resume. What I would like to stress most however is the fact that I have been consistent in all academic or co-curricular (and even Extracurricular) tasks that I have undertaken.

### **My primary interests**

I have always loved problems that involve plenty of visualization. At \*\*\*, this resulted in an inclination towards Computer Graphics and Computational Geometry, and also Algorithms. These are the subjects that I want to pursue in my graduate study.

I chose the elective Computer Graphics and a graduate level course Algorithms and Complexity this semester, in line with these interests. My B.Tech. Project (home paper), under **Dr. yyy**, is on **Visible Surface Determination** (hidden surface removal), a very popular topic in Computational Geometry.

### **Why Brown University?**

It would be a cliché to say that all fields in Computer Science are highly interlinked. I have experienced this myself, since frequently, while working on a problem in one field, I have (through abstraction/ reduction/analogy) landed up looking at another problem, that one would normally put under a different field altogether.

Hence, two criteria that I considered while selecting a university for my Ph.D. were the university must be very strong in Computational **Geometry** and/or **Computer Graphics my primary interests**, and it must be fairly good, if not exceptional, in other fields of Computer Science too (especially, algorithms and combinatority).

Brown University more than satisfies these criteria. My B.Tech. Project guide, Dr. yyy also strongly recommended it. An added attraction is its participation in the Science and Technology Center for Computer Graphics and Scientific Visualization.

There is one more and the most compelling reason. In my B.Tech. Project, my guide and I are concentrating on developing better methods for the moving/multiple viewpoint case of hidden surface removal. The preliminary ideas that have emerged out of this effort use a result on Dynamic planar point location by **Prof. yyy**. The line sweep technique is the other major component in these ideas, and it was from Prof. Yyy book on Computational Geometry, that I first learnt it. The fact that both are from Brown University convinced me that Brown University is the natural choice in realizing my graduate goals. Subsequently I corresponded with Prof. yyy, and his encouraging reply reinforced my decision to apply to Brown.

It would be a pleasure to continue my current research focus at Brown under their supervision. At the same time, I am sure that many other problems, which the Brown CS department is currently focusing on, would be equally interesting to work on.

**What I plan to do at Brown**

I plan to carry on advanced study of Computer Graphics and Computational Geometry, as well as related fields (e.g. algorithms); not only through coursework but also by {participating in one of the several ongoing projects}. This will also give me the opportunity to contribute my bit to the understanding of the fields, which interest me so much.

I am keen that the output of my PhD (and in fact any PhD) be well worth the time and effort spent on it. For the reasons mentioned above, I am sure that Brown University Will provides me the right environment for this.

**Financial Aid**

I would be fully dependent on aid to finance my graduate studies. If I were granted an assistantship, then given my long-term goals, a research assistantship would be an ideal experience for me. I also have some experience as a teaching assistant. Not only have I enjoyed it, but the students have also appreciated it. This makes me confident that I will be a good teacher also.

**In conclusion...**

I am aware that Brown University expects very high standards from its students. On my part, I can assure you of hard work. I believe that my enthusiasm will enable me to meet those expectations. My consistency in all previous academic and co-curricular activities is what gives me confidence when I say this.

Eagerly looking forward to a long and mutually profitable association with the Computer Science Department of Brown University.

**STATEMENT OF PURPOSE 9**

My early fascination for computers (since high school), combined with a strong liking for analytical subjects inspired me to seek admission to one of the best and most competitive Computer Science undergraduate programs in India — the B.Tech program in \*\*\*. I was successful in this endeavor, being ranked 113th among around 100,000 students in the entrance exams to the \*\*\*. In \*\*\*, a very strong curriculum, introduced me to a wide range of subjects in Computer Science, with a strong emphasis on theoretical fundamentals. I have always believed that a subject is understood better when one actually sees an abstract theory being realized by a practical system. The various demanding laboratory courses and projects in the B.Tech program at \*\*\* have provided me with a better understanding of Computer Science. This belief has led to my growing interest in computer systems, and I have consistently performed well in my laboratory courses. I have also, as part of a campus wide systems support group, been involved in compiling and installing various software and systems.

Given these practical interests, my theoretical background, my aptitude and academic potential for graduate study (indicated by my GRE General score of (V 700, Q 790, A 780) and Computer Science Subject score in the 98th

percentile), I feel that pursuing a PhD Degree in Computer Science is a step in the right direction towards my long-term career goals.

Thirty years from now, I want to be able to look back at the accomplishments of my life and feel a sense of satisfaction. Satisfaction, because my work made a significant impact in my field. And if I can achieve this goal I will consider my career a success. Over the past four years, I have become absolutely convinced that the path towards this goal will involve leveraging my current skills and abilities to make significant contributions to improve the understanding of systems and concepts in the field of Computer Science. Six or seven years from now, I see myself as part of a leading research group, contributing my bit to the field of Computer Science. A PhD in Computer Science is therefore a natural first step towards this goal.

I plan to work towards a PhD in the field of {Distributed Systems and Networking}. I have become interested in this area during the course of my undergraduate studies at \*\*\* through a series of research and project experiences.

In my junior year, I presented a home paper on “Wormhole Routing in Interconnection Networks.” Currently, I am in the midst of my yearlong B.Tech thesis, titled “Distribution Strategies for the Satisfiability Problem,” guided by Prof. yyy (PhD, University of Illinois, Urbana-Champaign). For this thesis, I am writing a distributed solution for the satisfiability problem, on a network of workstations. My work will involve studying various distributed computing techniques and writing a distributed version of existing sequential solutions to satisfiability. Moreover, this Semester I have undertaken as an Operating Systems course project, a study of implementation issues in “Group Communication in the {Amoeba} Distributed Operating System” and will be crediting a Postgraduate elective — “Foundations of Parallel Computation” in my final (next) semester.

In my opinion, the effective communication of ideas is an important part of any research career. During my undergraduate years in \*\*\*, I have been fortunate to have some experience in teaching basic Computer Science. In my junior year, I was a teaching assistant for an institute level introductory course in programming, “CS 101: Computer Programming and Utilization,” for freshmen. The work involved conducting tutorials, grading assignments, and providing assistance during practical sessions.

In my junior and senior years, I have been the Technical Coordinator, and subsequently General Secretary of the Computer Science and Engineering Association, \*\*\*\*. In this capacity, I have been actively involved in planning, organizing and lecturing at; various workshops on UNIX aimed at both technical and lay audiences. These experiences have been extremely rewarding, and I am sure they will help me in any teaching duties as a graduate student, and later on in my career.

I am confident that my strong motivation, my undergraduate experiences and my analytical aptitude will help me to measure up to the rigors of graduate

study. I am looking forward to make my contributions to the research going on at Dartmouth.

### **STATEMENT OF PURPOSE 10**

In this era of information technology I feel a sense of pride in being so closely associated with the field of computer science. The desire to forge ahead in this field by doing cutting edge research has motivated me to pursue graduate studies.

#### **Academic Background**

I hail from a small industrial town where education is given a very high priority. My father is an educator himself. This background inculcated in me a deep inclination for academics from the very beginning. The subjects that attracted me most were Mathematics and Physics. In order to pursue a career in science and engineering, I appeared for the Joint Entrance Examination for admission to \*\*\*\*. Securing an {All India Rank of \$162\$} amongst \$100,000\$ candidates (\$99.8\$ percentile), I joined \*\*\*\*, one of the best institutes for engineering education in India. The growing involvement of computers in various fields of science and technology encouraged me to choose computer science as my branch of study in undergraduate studies.

#### **Undergraduate Studies**

After coming to \*\*\*\*, I was introduced to the true expanse of computer science. The core courses gave me an in-depth knowledge in each field. The lab courses and projects gave me the programming skills (for details of the projects please refer resume). Most of these projects were done in groups of two to four students. This gave me the opportunity to learn to work in a group — both as a leader or otherwise.

#### **Areas of Interest**

My main objective during my undergraduate studies was to get an overview of various fields in computer science and identify a field of interest in which I could pursue my research career. Because of their vast applications, computer systems, in general, have attracted me. In particular, I am interested in databases, distributed systems and parallel processing. My junior thesis was on (database mining}, which I completed under the guidance of Dr. yyy am currently doing work in {parallelizing compilers} as part of my Senior thesis under Dr. S. Biswas. I have also registered for a course on “models of parallel computation”, intended to deal with fundamentals of parallel algorithms and parallel architectures, in the forthcoming semester.

#### **Career Objectives**

Within a decade or so, I visualize myself as a full-fledged research professional in an organization or a faculty member at one of the leading Universities. I see PhD as a first step in achieving this career objective. I am willing to do MS as an intermediate step.

#### **Strengths**

There are a few things whose value I realized during my undergraduate studies and now I strongly believe in them. These are {hard work} — Necessity to produce results, (discipline) — Necessity to finish task before deadlines and {persistence} — Necessity to sail through unproductive periods. My attempt throughout has been to inculcate these qualities in myself in which, I believe, I have been fairly successful.

### **Weaknesses**

A major weakness of mine has been my speed. I always try to attack a problem in depth, which invariably requires some amount of time. As a result, I have not been able to perform very well in “three hour” exams. This weakness has been reflected in my grades. However, given sufficient time I have always been able to show good results, reflected by the good grades (AA or AB) in lab courses involving projects.

### **Reasons for selecting Ohio State University**

My advisors recommended me of your university on the basis of faculty interests and the research work currently in progress. After going through the brochure, I realized that there also exists a vast gamut of opportunities, especially excellent computing facilities, in your department. In addition, from the communication I had with Dr yyy, I have to come to conclusion that the graduate program at your department would suit my interests extremely well.

### **Conclusion**

I am fully aware that a research career requires a constant, well—directed and whole—hearted effort. I am confident that I would meet all the above demands. Hence I appeal to the Graduate Admissions Committee to consider me for admission, and financial aid.

### **STATEMENT OF PURPOSE 11**

### **STATEMENT OF PURPOSE 11**

I am a final year student of the four year Bachelor of Technology (B.Tech.) program in Computer Science & Engineering at the \*\*\*\*, one of the nation’s premier institutes. My long-term career objective is to pursue a research career, either as a faculty in a university or a researcher in Industry and Graduate Study at your department would be the first step towards this Goal. Since childhood I have had a strong inclination towards science. My excellent performance in academics inspired me to take up science as a career. I therefore, took the Joint Entrance Examination for admission to the \*\*\*\* and qualified in the top 0.12% of about 150,000 who took the test.

The excellent course structure coupled with high academic standard further stimulated my interest in scientific pursuit. My approach towards courses was to grasp the basic concepts so as to develop a ‘feel’ for the subject. My grades reflect my attitude towards courses. As a part of curriculum I actively participated in many innovative projects. As a result I have developed a keen interest and have a sufficient aptitude for research and therefore I believe that I shall be capable of meeting the best standards in research.

**Interest**

Over the past two years in the Computer Science department, I have developed a keen interest in Programming Languages and Distributed & Parallel Systems. I have taken many courses related to this field and have done consistently well in them. Courses such as Programming Languages, Language Processors (Compilers), Operating Systems have given me considerable exposure to this field. I am taking a Graduate level Course on Parallel Algorithms next semester.

Currently I am involved in my B.Tech. Project on "Program Restructuring for GENSAT" under the guidance of Dr. yyy. Details of the project are given in my resume. Presently I am implementing an algorithm by Zahira Ammargulleat. I have proposed a few changes in her algorithm and have proved that the new algorithm would do better than the one proposed by her, in all the cases.

A good deal of teaching experience, as seen in my resume, makes me confident of my ability to communicate as a teacher.

**University**

Computer Science at UIUC is one of the best programs to pursue research in the field of

Systems. From the information brochure, web pages and as advised by my guide, Dr. Dhamdhere, I have gathered that a considerable amount of research is being done in Systems in UIUC. A number of renowned faculty members of UIUC are working on the research frontiers of computer science. It would be my privilege to work with such renowned researchers, and contribute something useful to Computer Science.

**Conclusion**

I look forward to join UIUC as a Graduate student at your esteemed department.

**STATEMENT OF PURPOSE 12**

My aspiration to work at the frontiers of scientific research leads me to apply to your university. I believe that a comprehensive knowledge and a good grasp of fundamentals are essential for such a career. I feel that Graduate studies in Computer Science in a good University like yours will help me realize this objective. Therefore I am seeking admission to the Ph.D. Program at Harvard with a specialization in Computer Science. I have compelling reasons to believe that I will be extremely successful both as a Graduate student and later as a researcher.

As a first step towards obtaining a Ph.D., I am seeking admission to the Master's program at Harvard University with a specialization in Computer Science. I would prefer doing a direct Ph.D., if it is possible.

My superlative performance in school fetched me a number of awards at the national level. I was awarded the prestigious National Talent Search Scholarship in class ten and was in the top twenty-five in the National Standard Examination in Physics in my twelfth. I had developed a keen interest in science and decided to choose it as my career. I therefore, took the



Joint Entrance Examination for admission to the five \*\*\*, which are considered the best academic centers for science and Engineering in India and qualified in the top 0.3% of those who took the test.

I have always adopted a rigorous approach in order to attain an in-depth understanding of the subject at hand. This has given me a broad conceptual basis, which, I believe, is essential for my research career. My grades in the basic courses reflect my quest for fundamentals. My overall grades in my undergraduate studies have been good, but not excellent. This again reflects my approach to courses more as an introduction to concepts that need further independent study by the student, rather than as a run-up to a semester-end examination.

Over the past two years in Computer Science I have developed a special interest in Programming Languages and Distributed Parallel Systems. I have been involved in research in these areas and have consistently obtained good grades in the related courses. In Spring' 95, I will be taking two Graduate level courses in these fields namely 'Distributed Databases' and 'Advanced Compilers'. I have written an article on "Distributed File Systems" with Prof. yyy, which appeared in the September 1994 issue of {bf CSI (Computer Society of India) Communications}. In this article the basic concepts underlying the design and implementation aspects were discussed and contemporary systems like Locus, Andrew and Unix United were surveyed in detail.

I am currently working on Register Allocation Algorithms for my B.Tech thesis under the guidance of Prof. yyy. In my project we have introduced a technique of live range confinement, which adapts the live range of a data item to the availability of register. Instead of splitting a live range like in a Chow-Hennessy allocator we are implementing the confinement technique. Half way through the project we have already sent part of our work for the ACM SIGPLAN'95 Conference on Programming Language Design and Implementation sponsored by the **Special Interest Group on Programming Languages, Association for Computing Machinery**.

I had also presented a course paper on language Linda, which consists of operators that embody tuple space, model for Parallel programming %and involves Distributed Data Structures.

I have a reason also to be confident of my abilities as a teacher. As part of a nation wide teaching program, I have taught school children subjects like Physics, Mathematics and English for four semesters (three hours per week). This was an interesting experience, which I feel would stand in good stead in the future.

I take immense pleasure in learning new concepts. This inquisitive nature of mine along-with a desire to realize my full potential drives me to pursue research. I am aware that research calls for complete dedication and commitment. I consider myself to be mature, perceptive, persistent and open to criticism % qualities, which I believe are essential for group research.

By working under the guidance of distinguished professors like Prof yyy, whose interests match closely with mine, I am confident of making an original contribution to the field of Computer Science.

I have studied in one of the best institutes of our country and feel the need to expose myself to research in United States, which is currently a world leader in Computer science. I have chosen to pursue Graduate studies at Harvard University because the facilities at Harvard seem to foster a healthy research environment as I could gather from the brochure of your department. I believe that I possess the motivation, the intellectual ability, and the preparation to set out on this exhilarating and arduous path, to do justice to a demanding Graduate program and to make significant contributions to the ongoing work at your University. I have chosen to pursue graduate studies at University of Maryland because by working under the guidance of distinguished professors like Prof, whose interests match closely with mine, I am %confident of making an original contribution to the field of Computer %Science. I believe that I possess the motivation, the intellectual %ability, and the preparation to set out on this exhilarating and %arduous path, to do justice to a demanding Graduate program and to make %significant contributions to the ongoing work at your University.

I look forward to joining Harvard University as a Graduate student at your esteemed department.

### **STATEMENT OF PURPOSE 13**

My decision to apply for a Ph.D. program at University of Utah is driven by my aspirations to pursue a research career in the field of Computer Science. This field interests me because of its formal and rigorous mathematical nature and it's wide-ranging

applications. I believe that a strong and thorough background as well as complete awareness of recent developments is essential for an intellectually stimulating and satisfying research career. Towards realizing this objective at an esteemed department such as yours, I am applying to your university. An objective analysis of my background, interests, strengths and weaknesses lead me to believe that I will be successful both as a Ph.D. candidate and later as a researcher in an academic milieu.

Academics have always been my stronghold. My inquisitive nature and a strong desire to ingrain the fundamental principles as well as techniques of any subject of study have enabled me to achieve an excellent academic record. More importantly, it has inculcated in me the methodology of scientific inquiry as reflected in my rigorous and analytic approach to problem solving. This is further evident from my performance at higher-secondary school level and at \*\*\*\*. The excellent course structure at \*\*\*\* has given me a sound and broad conceptual basis, which, I believe, is essential for a research career. Through many projects I have undertaken in a stimulating academic environment at \*\*\*\* where learning and research go hand-in-hand, I have found that I have a deep

interest in research work, a strong motivation and an aptitude for the type of problem solving it involves.

Over the past two years at \*\*\*\*, I have cultivated a keen interest in the field of Asynchronous Circuits, Formal Design Methods in VLSI. I have furthered my knowledge in this field by reading various related articles and am actively involved in research in this area. I have also opted for a graduate level course IC Design Technology in Spring 96. I am currently working on Asynchronous Communication between Synchronous Finite State Machines for my B.Tech. Thesis under the guidance of Prof. yyy. I am working towards implementing communication primitives such as rendezvous, probe etc. at gate level in VLSI circuits. I am investigating different interconnect design methodologies which can be implemented as delay-insensitive asynchronous circuits. In the first stage of this work, we have proposed a new protocol to implement asynchronous rendezvous communication and a method to implement this protocol using asynchronous circuits. I firmly believe that this project is a sufficient demonstration of my ability to conduct original and independent research.

I have strong reasons to believe that I possess the temperament for teaching, a good power of speech and a thorough and extensive knowledge of my field: traits required for a successful teaching career. I have worked as a teaching assistant in a Nation-wide teaching program for two years. I have also been lecturer and tutor for three UNIX workshops conducted by CSEA, \*\*\*\* which were attended by more than 250 people every time. This experience developed and honed my skills of organizing and communicating my thoughts in front of a responsive and critical audience.

I have always attempted to gain insight into the problem at hand and tackle it from different angles. I am well aware that a career in research calls for personal commitment and personal sacrifice of time, leisure and immediate reward. However, my desire to realize my full potential and to make an original contribution to the field of Computer Science drive me to pursue a research career, which, I believe, will give me intellectual satisfaction, gratification of becoming a contributor to knowledge and personal rewards of learning and discovery. I not only possess the intellectual ability, sound preparation and the strong motivation for research but also consider myself mature, friendly to work with and open to criticism: qualities essential for group research.

I believe that a symbiotic relationship between the student and his department is of utmost importance for a successful graduate program. Considering the pioneering work going on at your department in the field of my interest, your department is an ideal choice for an exciting research career. At the same time, I am confident of contributing originally to the ongoing work at your department. By working under the guidance of distinguished faculty at your department, I am sure; I will be able to exploit my potential to the fullest.

Keeping this in mind, I look forward to joining University of Utah.

**STATEMENT OF PURPOSE 14**

I am applying to Massachusetts Institute of Technology for admission to the Ph.D. program in Computer Science. I am especially interested in Theoretical Computer Science including the design and analysis of algorithms like Approximation algorithms, Randomized algorithms, Parallel Algorithms and Complexity Theory and Combinatory.

I have a strong background in Mathematics. I was placed in the merit list in Mathematics in school and high school and secured the 1<sup>st</sup> position amongst 100,000 candidates in the all India Joint Entrance Examination (JEE) for the \*\*\*\*. My first exposure to computers came via programming in high school and I found it so stimulating that I decided to pursue a career in Computer Science. At the \*\*\*\*, the excellent facility, faculty and the wide spectrum of courses have given me an excellent command on the fundamentals of Computer Science. I have always been fascinated by abstract Mathematics and I have found.

Theoretical Computer Science just the right blends of abstract Mathematics and concrete Computer Science. My interest in this field has kept on growing with courses like Discrete Structures, Data Structures and Algorithms and Theory of Computation which have been my favorites.

My B. Tech. Seminar (Junior Thesis) included a literature survey on Topological Graph Theory V and my B. Tech. Project (Senior Thesis) is on Combinatory and Algorithms/in which I am attempting to obtain better solutions to various problems like constructing minimal fault tolerant circuits and approximation algorithms to construct maximal planar sub graph. This has given me experience in mastering abstract Mathematical concepts as well as in designing good algorithms for simply expressed practical problems. My skills and interest in this field have been further improved upon by courses such as Design and Analysis of Algorithms and Geometric Algorithms in which I have been exposed to randomized algorithms for problems in computational geometry. To further improve my command in this field, I have taken Foundations of Parallel Computation and Information Theory and Coding for the coming semester. I am also attending a lecture series on the  $P$  vs.  $NP$  problem.

I strongly feel that Algorithms and Complexity theory are the core subjects in Computer Science and problems in all fields can be handled using these techniques. This area also has a large potential for research and this is what I envisage myself doing a few years from now, preferably in an academic environment.

I am convinced that I should pursue a career in research and teaching. For me, problem solving is an experience unmatched by anything else. It would give me immense pleasure to be able to contribute something to this subject. My limited teaching experience as tutor in an introductory undergraduate programming course has been very positive and I would love to be able to teach my favorite subjects and thus get a better understanding of these fields myself.

I have heard a lot from \*\*\*\* alumni and faculty about the excellent faculty in Theoretical Computer Science, the research done in this field and the performance of the students who have graduated from MIT. I am sure that the stimulating academic environment and interaction with the distinguished faculty will prove immensely fruitful and facilitate my development as an individual researcher in my field. I feel that MIT has a lot to offer me, and at the same time, I am confident that I would be able to make a positive contribution to on going research work at MIT.

With these long-term goals in mind, my immediate objective is to work towards a Ph.D. in Computer Science. Having decided that I will engage in a career in research, I am aware of the kind of dedication, resilience and resolve I will have to show over the years. I feel 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 department.

### **STATEMENT OF PURPOSE 15**

#### **My goals**

I am applying to the University of California, Santa Barbara for admission to the Ph.D. program in Computer Science. My goal is to pursue a career in research, either in industry or in academia. Ten years from now, I envisage myself as a full-fledged research professional in an organization, or a faculty member at one of the leading universities. A Ph.D. is an important first step in achieving this objective.

#### **My background**

Though I was exposed to some aspects of Computer Science in my last two years of school, a comprehensive foundation in all the fields of Computer Science began after I entered \*\*\*\*. The Computer Science department at \*\*\*\* is indisputably among the best in the country. Its excellent courses, faculty and learning environment have given me a firm grounding in all the fields of Computer Science.

My academic and co-curricular record has been consistently good. Throughout school as well as now, I have been at or near the top of my class. My class at \*\*\*\* consists of 36 students, chosen from an All India exam involving 100,000 students. I myself was 9th in that exam. I have listed some of my achievements on the attached resume. I am of the opinion that research requires a firm grounding in theory backed up by an in-depth knowledge of systems and implementation. The important courses of Discrete Structures, Data Structures & Algorithms, and Theory of Computation have given me a good knowledge of theory. In addition, I am doing the course Design\Analysis of Algorithms this semester and Parallel Algorithms next semester, in order to further firm up my foundations. My performance in lab courses attests to my knowledge of systems and programming.

My strengths are my consistency, capacity for hard work, and my ability to work in a team. I have been involved in many course projects, which involved a

group of students, and I have been the team leader in quite a few of these. I believe that research involves new ideas, as well as consistent effort to back them up, both of which I am capable of.

### **My primary interests**

I prefer research problems to be an ideal mix of theory and practice. The field of {Databases} interests me because of the scope for breaking new ground, as well as the vast applications possible. I believe that {Distributed Databases}, in particular, is an area with a lot of potential. My grounding in this field is solid, which is reflected in my obtaining the best possible grade in both the courses involving Databases, namely, Business Information Systems and Database Management Systems, and in their respective labs too. Currently, I am working on my Senior Thesis under Dr. yyy, in which we are looking at the problem of Garbage Collection in Persistent Object Stores We plan to submit it for publication after running some performance tests, which we are designing. I have included details in my resume.

### **Why California-Santa Barbara?**

Since all fields in Computer Science are highly interlinked, I want to pursue graduate studies at a University that is strong in all fields of Computer Science. I am aware that the department of Computer Science at the University of California, Santa Barbara is one of the best in the world, being particularly strong in Databases (my primary interest). Dr. yyy also recommends it highly. These facts have led me to apply to California-Santa Barbara.

There is one more and the most compelling reason. In the course of my Senior Thesis, I have come across related work by Dr. yyy. His work has interested me immensely, and I would like to participate in some of the projects he is undertaking. Subsequently I corresponded with Dr. yyy, and his encouraging reply and description of the work at the department reinforced my decision to apply.

### **Financial Aid**

I would be fully dependent on aid to finance my graduate studies. If I were granted an assistantship, then given my long-term goals, a research assistantship would be an ideal experience for me. I have already mentioned my interest in research. I also have some experience in teaching. I have been a lecturer & demonstrator in student workshops held in various colleges in the region. I was also involved in a nationwide program, which involved teaching school children. The good response to my efforts, coupled with my prowess in dramatics, elocution & debating gives me the confidence to handle any teaching assignment.

### **My plans if admitted**

I plan to carry on advanced study of Databases, as well as related fields e.g. Algorithms, not only through coursework but also by participating in one of the several ongoing projects. This will also give me the opportunity to contribute my bit to the understanding of the fields, which interest me so much. I am aware that the University of California, Santa Barbara expects very high

standards from its students. My track record gives me the confidence that I will be able to meet those expectations. I believe that my association with the Computer Science department will be a mutually profitable one.

## **STATEMENT OF PURPOSE 16**

### **Academic & Career Objectives**

My long-term career goals include the pursuit of research in the field of Theoretical Computer Science and teaching in an academic environment. I have found that a career in research is both intellectually stimulating and satisfying and hence I have decided to take this up as my career objective.

### **Degree Objectives**

I want to work towards a Ph.D. in Computer Science in the field of Theoretical Computer Science. My interests include both the design and analysis of Algorithms as well as Computational Complexity Theory.

### **Reason for Graduate Work**

I have always been fascinated by mathematics. As a part of my undergraduate curriculum, I have been exposed to a range of advanced mathematical techniques and I have been especially drawn towards both the analysis of Algorithms and Complexity Theory. These fields have both a strong mathematical flavor as well as the potential for research which is what attracts me towards them.

The fact that these subjects form a unifying feature of all fields in Computer Science and their quest towards achieving the limits of what can and can't be done, form part of the reasons for my fascination in them.

An undergraduate degree is merely an exposure to the various fields in any branch of higher education. I feel that my undergraduate curriculum has given me a sufficient enough exposure to all the various possibilities for research that are possible and I have chosen the one for which I have both an aptitude as well as a liking that I both have an aptitude for as well as a liking.

In order to pursue an active career in research, it is necessary to both study and understand the finer nuances of any subject. I believe that Graduate Studies will not only provide me with advanced knowledge about the field but also prepare me to be a good

researcher. It is precisely this reason, which prompts me to take up Graduate Studies as the next step towards my career objectives.

As an initial step towards achieving my goal, as part of my undergraduate studies, I have chosen my electives so as to enhance my understanding of these subjects. These include such subjects as Design & Analysis of Algorithms, Combinatory and Abstract Algebra I. I have also audited (taken as non-credit) a Graduate level course Algorithms & Complexity. I have attended an Advanced Mathematics Training Program in summer '93 so as to enhance my mathematical abilities.

### **Why have I chosen Stanford**

I have chosen Stanford as the place at which I would like to pursue a doctoral degree because I find that the graduate program is fully suited to my needs

and that it possesses a strong faculty in the field of Theoretical Computer Science.

I have also consulted the professors in my university who are working in the field of Algorithms and Complexity Theory and they have strongly recommended the research work in these fields at Stanford.

Hence, I have applied to Stanford so as to fulfill both my academic as well as my career objectives.

### **STATEMENT OF PURPOSE 17**

#### **My goals:**

After considering my aptitude and the type of work that I like to do, I am convinced that I want to take up a research career in Computer Science. Since a good research career can only be built on the firm foundation of good education, my immediate objective is to pursue a Ph.D. in Computer Science.

#### **My background and my primary interests:**

I have always had an excellent academic record. I was awarded scholarships at the National level in the 10<sup>th</sup> and 12<sup>th</sup> standards. Later, I secured the 151<sup>st</sup> rank among 100,000 candidates (99.8 percentile) in the All India Joint Entrance Examination for admission to the \*\*\*\*. Due to my keen interest in Mathematics and fascination for computers, I chose Computer Science and Engineering as my major field. The excellent facilities, courses and faculty at \*\*\* have given me a lot of drill in both theoretical as well as implementation aspects of computer science. I believe that this combined with the mathematics courses that I have taken forms a sound foundation for graduate study.

During the course of the B.Tech. Program, I have developed a keen interest in Systems. My experience in Systems includes, besides the courses listed in the sheet titled Computer Science Background, a number of projects such as a project on Linux NFS, an implementation of extendible hashing for a toy DBMS and an implementation of a Compiler for a subset of Pascal. As far as research experience goes, I am working on my B.Tech. Project (Senior Thesis) titled 'Surface Design for 3-D Graphics', under the guidance of Prof. yyy and Prof. yyy. I have included a brief summary of all these projects separately. I shall also be doing a course in Parallel Computing under Prof. yy All these courses and projects give me a firm foundation in Systems and I intend to build upon this foundation in my graduate studies.

#### **Other activities:**

I have been actively involved in various co-curricular and extra-curricular activities. I have regularly participated in Elocution and Dramatics competitions and have won prizes. I am also a member of the IEEE and the IEEE Computer Society.

#### **Teaching experience:**

I have some experience as a teaching and laboratory assistant for an institute level course for the first year undergraduates. Not only did I enjoy it, but the



students also appreciated it. This gives me confidence that I will be a good teacher as well.

### **Why UCSD?**

I believe that in order to be a successful researcher, one must not only be a master of one's field, but also have a feel of other related fields. Hence, I want to pursue graduate studies at a university, which has an excellent program in Systems and is also good in other fields of computer science. UCSD satisfies these criteria perfectly. I am sure that working in such an excellent setup will give me valuable research experience and enable me to produce an excellent output in my Ph.D.

### **In conclusion:**

I am aware that UCSD expects very high standards from its students. On my part, I can assure you of sincerity and hard work. I am confident that my enthusiasm will enable me to meet your expectations.

Eagerly looking forward to joining the University of California

### **STATEMENT OF PURPOSE 18**

My schooling and three and a half years of undergraduate studies in EE at the \*\*\*\* have made the choice of further study, for me, an obvious one. This should be attributed in part to the values that have been inculcated in me during my formative years in an educated middle class family background.

Beginning with a passing interest in EE, these years of in depth study have convinced me that my future lies in microelectronics. The challenges and possibilities for research in device, analog and digital circuit, and VLSI circuit design fascinate me. This I believe has come about through a sequentially structured introduction to this field through the courses:

Modern Physics,

Electronic Devices,

Analog Circuits,

Digital Circuits,

Integrated Circuit Design and Technology.

In addition, I have worked on a number of related projects. I have worked on MOS capacitor characterization under Prof. yyy using a quasi-static approach. My B.Tech seminar (home paper) dealt with Monte Carlo simulations of small Si MOSFETs. My guide was Prof. yyy of the EE Dept. of \*\*\*\*. I have undergone eight weeks of practical training in a Dept. of Electronics lab where I studied the theoretical and practical aspects of active and passive coupling of edge emitting semiconductor lasers to optical fibers. An LD-SM optical fiber module was made and experiments were carried out. In my senior year I presented a seminar on Noise in Semiconductor Devices under the Microelectronics Seminar Series at \*\*\*\*. My senior year B.Tech project (senior thesis) involves design of ultra low noise analog circuits. The final goal of the project is to design, with intent to fabricate, an ultra low noise integrated circuit operational amplifier. My B.Tech project work is progressing under the guidance of Prof. yyy of the EE Dept. of \*\*\*. I can quite confidently say that my

abilities in circuit visualization, analysis, and design are unparalleled in my department. In the process of pursuing my interests in EE, my academic performance has been outstanding. I have been consistently ranked 2nd in EE out of 64 students, and 8th in \*\*\* out of 325 students. I was included in the director's academic honor list for the academic years

1991-1992

1992-1993

My academic pursuits have not however, prevented from participating with interest in various extracurricular activities. I have taken part in various literary activities. I am a regular participant in elocution competitions and debating society meetings and have been the editor of the hostel magazine. These activities have led to the development of a multifaceted personality and have equipped me with strong interpersonal skills. This helps me to lead, as well as follow the leader when working as a team.

From where I stand now, I see myself engaged, in the long term, in a career devoted to active research in microelectronics. It is with this objective in mind that I want to pursue an M.S. at Stanford University. My ultimate degree objective would however be a Ph.D. In choosing Stanford University as the University of my Choice, I've looked carefully at the faculty and the available infrastructure.

The essence of university education lies in the success of the symbiotic relationship between the student, and his department. With your repute in the field of my choice, you do have a lot to offer me, and at the same time, I am confident of contributing meaningfully to the research endeavors at your University. It is with this in mind that I am looking forward to a long and rewarding relationship with you.

### **STATEMENT OF PURPOSE 19**

#### **Introduction:**

As we near the end of the twentieth century we can see the ever-growing need for computer technology. Over the centuries man has always wanted to compute, and process information as quickly as possible. He has also wanted to communicate with his fellow human beings who are widely distributed over this vast world. No one thirty years ago would ever dream of computers being used as they are in the information superhighway, rather than for scientific computing. The sudden boom in the use of computers today, is evident by the visible 70% increase in the number of hosts on the Internet yearly. Man has needed computers not only to control the forces of nature, but also those of distance, and time.

Ever since I was a child I have been interested in mathematics, and have always stood first in my class in it. When my teenage years came along, I decided that I would pursue a career in mathematics and science. It was with this hope that I studied very diligently for the entrance exam. My hard work paid off, and I joined \*\*\*\* for a Bachelor's degree in computer science and Engg. During my stay at \*\*\*\*, I was introduced to computers in my very first

month. It was an extremely exciting experience because it was the first time I had used a computer, since the use of computers in our country, is only restricted for those who are financially well off.

### **My Work:**

At \*\*\*\*, I was introduced to various new concepts in computer science. The very first courses of Discrete Structures, and Data structures, aroused my interest immediately. I started also getting interested in Databases, Computer Architecture, and Compilers. I did my Bachelor's seminar project "Building Applications using the Object Oriented Paradigm" under the guidance of Prof. yyy. It mainly consisted of studying the Object-Oriented Paradigm, and Object-Oriented Databases. I studied how to build Object-Oriented Applications above relational databases, which came in use during my short job with Burroughs Welcome, pharmaceuticals, in building engineering inventory system for them. I also studied how objects are stored, and indexed in Object-Oriented Databases.

My Bachelor of Tech. project consists of parallelizing sequential code and running independent sections of code in parallel. For doing this I have been studying data dependence issues. During the course of my work I got particularly interested in Exact Array Dependence. I have read a lot of papers related to the field. Prof. yyy is my guide on this project.

### **My Purpose**

My vocation has always been to work towards new frontiers of technology, and always work with the purpose of getting the best result. Over the last few years during my stay at \*\*\*\*, I have become motivated towards pursuing a career in research. Research has interested me, because one is always working on something new, that no one else has worked on, and one can always pursue one's own interest to the fullest. Research provides one with new challenges daily, which one won't come across in other jobs. I strongly believe in both the theoretical aspects of research as well as their applications. I consider the latter to be as important and relevant as the former. I am extremely interested in pursuing a MS/PHD at your university. I am primarily interested in Databases, Parallel systems and graphics.

In fact, ten years from now, I envisage myself as a full-fledged research professional in an organization or a faculty member at one of the leading universities. In order to fulfill this aim of mine, I seek to enroll for a MS/PHD in computer science at your University. Through the department brochure I realize that a vast gamut of opportunities exist in your department. Hence I am keen in joining your program, and furthering your research.

### **My Good and Bad Points:**

I strongly believe in maintaining ethical integrity in all my endeavors. The maintenance of strong Christian values is of utmost importance in my work. I am also a very friendly person to work with. My bad qualities include having a bad memory and being absent minded. I would like to end by saying that that I am fully aware that a career in research and academics requires a high level of

intelligence, unwavering dedication and a lot of sacrifice. I am confident that I would meet all the above demands, and hence I appeal to the Graduate Admissions Committee to consider me for admission, and financial aid.

### **STATEMENT OF PURPOSE 20**

I am a final year student of the B. Tech. Program in Computer Science and Engineering at the \*\*\*\*.

My undergraduate preparation here has given me a very substantial knowledge of the basic areas of Computer Science. I have always strived to develop a clear understanding of the basic concepts and acquire an insight into the Science of Computing. Any amount of learning in Computer Science would be incomplete without hands on experience of Programming. In this regard I have completed various projects, both as part of my courses and out my own interest also.

Of the many fields in the Computer Science spectrum, I have developed a keen interest in Declarative Programming Languages, Computer Graphics, Computational Geometry and Design and Analysis of Algorithms.

I have excelled in academics at every step in my education. In my 12 years of schooling I always ranked first/second in the class. In the entrance examination for the \*\*\*\*, I stood 17th among 80,000 students. I have consistently done well throughout my undergraduate studies also. My GPA is 8.38/10.00 after the end of seventh semester.

The urge to obtain an in-depth understanding and specialized knowledge in my areas of interest, has made me opt for Graduate studies. I would like to follow up my graduate studies by taking up a research-oriented post in either academia or research laboratories so that I can contribute my own bit to the ever-increasing knowledge in these areas.

I believe that working towards a Ph.D best does the initiation of the process of original contribution. I view the master's degree as an intermediate step in achieving this goal. Hence, I would like to take up an M.S. culminating in a Ph.D. as my immediate goal.

From the information about current faculty research, which I obtained from the application brochure, I find that pioneering research work is being done in declarative languages and related architectures at the Arizona State University. Being part of such an excellent research team will be a big step in achieving my long-term goals. The highly competitive and intellectually stimulating atmosphere at the Arizona State University will bring out the best in me. This prompts me to apply for graduate studies at your university.

Keeping in view my background and career plans, I would prefer a research assistantship but I would also like to have teaching experience. I have studied in English medium through out and have had teaching experience here in \*\*\*\* also, which makes me confident that I would be a successful teaching assistant.

**In conclusion**, I would say that I am very keen and enthusiastic about joining your university. I am aware of the hard work and perseverance necessary for research work but

I am sure that I will be able to justify to the fullest the confidence reposed in me.

### **STATEMENT OF PURPOSE 21**

I am a senior year student in the Department of Computer Science and Engineering at the \*\*\*\*, one of the most renowned institutes for undergraduate studies in India. My decision to pursue graduate studies has been motivated by my eventual objective of meaningful research in the field of {bf Computer Networks} and {bf Communications}. I firmly believe that I possess the requisite background and aptitude for pursuing active research in this field at your University.

A strong desire to ingrain the fundamental principles of any subject of study has enabled me to adopt a rigorous and analytical approach to problem solving. More importantly, it has inculcated in me the methodology of scientific inquiry. Throughout schooling I maintained the first position in my class. In consonance with my interests, I worked towards obtaining admission to the \*\*\* and secured a rank of 92 among 85,000 candidates who appeared in the entrance examination. Computer Science and Engineering was a natural choice for my undergraduate studies in light of my fascination for computers.

My interest in research has burgeoned during the course of my undergraduate studies at \*\*\*\*. My major field of interest is computer networks and telecommunications. At present I am working on my senior year B. Tech. Project on Fast Packet Switching in ATM Networks under the guidance of Dr. yyy. It involves the design of a non-blocking Disjoint Path Packet Switch and the analysis of its performance in terms of the throughput; delay; packet loss rate, hardware complexity and the ease of grow ability. The proposed switch combines the delay throughput performance of  $N^2$  disjoint path switches and the multicasting performance of Shared Medium switches in a single architecture. The attempt is to reduce the hardware cost of implementing the switch without compromising on any of the performance characteristics of an ideal packet switch. To consolidate my knowledge in this field I had also taken an elective course titled Introduction to Computer Networks last semester in which I got the highest grade in the class.

Apart from delving deep into the field of Computer Networks, I have tried to broaden my perspectives in other fields of Computer Science as well. In my junior year I presented a Seminar on Anti-aliasing in Computer Graphics under the guidance of Dr. yyy. The seminar involved an exhaustive study of the various anti-aliasing techniques used to overcome the jagged effects arising due to the discrete sampling in a raster graphics system. I also implemented an anti-aliasing software package as part of a project in an elective course on Computer Graphics.

I also have the ability to work in a group project effectively. I had done my industrial training in the Regional Computer Center at Oil and Natural Gas Corporation Limited and during the course of the summer project I developed a data compression package. The practical experience I gained after working in such a big organization has given me immense confidence in tackling time-bound practical problems.

My undergraduate studies in the invigorating environment of \*\*\*\* has given me substantial knowledge of the basic areas of Computer Science. I believe that I also possess the ability and temperament to function effectively as a Teaching Assistant. I was an assistant for a course on Computer Programming for freshmen and I have helped in organizing two workshops on UNIX and C conducted by our department.

Having been part of an exacting undergraduate program a \*\*\*, I have internalized the desire to explore frontline knowledge in my research area. I believe that the Graduate Program at your University will provide me the opportunity to satisfy the same and enable further honing of my technical and analytical skills acquired thus far. I am fully aware of the commitment and perseverance required for research and believes that my aptitude and motivation will see me through the challenge. I am also confident that given an opportunity, I can contribute to the ongoing work in your graduate program in a productive manner. I therefore look forward to joining your University for pursuing higher studies leading to a Master's/Doctoral degree.

## **STATEMENT OF PURPOSE 22**

My objective in graduate studies is to prepare myself for my long-term goal of a career in research and teaching in Computer Science. The first step in that direction is pursuit of Ph.D. in Computer Science.

Ever since I was in high school, I wanted to be a scientist. Hence I joined \*\*\*\*, where I chose Computer Science as my undergraduate major. The undergraduate program in Computer Science and Engg. in \*\*\*\* is unarguably one of the best in India and the core courses in the undergrad curriculum have helped me get a sound grasp of the fundamentals of almost all aspects of Computer Science, which is reflected by my position in the top five in a class of 33. At \*\*\*\*, I also discovered the intellectual satisfaction of solving difficult problems on my own. In the summer vacation after the first year, I worked for some time with a research scholar in the department of Computer Science and Engg. This work led to a research paper, "Heuristics for Distributed Knowledge-Based Systems", which was published in 1994. Because of this and my success in the undergraduate courses, I feel that a career in research is suited both to my aptitude and temperament.

My idea of research in graduate studies is a proper balance of theory and practice. i.e. to get theoretical results and to see, as far as possible, the immediate impact of the same through their implementation. I am aware of the tough and arduous nature of this task and willing to take on this challenge. I believe that I have the requisite intellectual ability, motivation and the

willingness to sacrifice leisure for work in order to fulfill my objective of scientific research and the attainment of intellectual satisfaction there from. Thus I believe that I will be able to make a meaningful contribution to the research work at Rice University.

The exacting nature of the undergraduate labs in \*\*\*\* has already given me a comprehensive knowledge of systems and systems programming. But I feel that a strong background in theory is essential for a successful career in research in an academic environment. So in order to augment the knowledge of theory, which I got from the core courses, I am trying to learn as much of theory as possible in my undergraduate program. I took two courses on {Algorithms} and one on {Formal Specification and Verification of Programs} for my department electives in the seventh semester and I will be taking a course in {Combinatory} next semester. My credit seminar topic viz. {bf Randomized Algorithms} under the guidance of Prof. Yyy so in theory. Looking at the beautiful results in algorithms, I am sure that I would be exhilarated to get some new exciting results on my own. But implementing the results and proving their practicality would give me greater satisfaction. My one-year B. Tech. Project, under the guidance of Prof yyy, involves the design and implementation of an {bf Optimizer Generator System}. In this, I have to come up with my own idea for implementing inter-procedural may-aliasing.

Currently, my research interests are in Parallelizing and Optimizing compilers and I have worked in both. I am also interested in Algorithms. I am eager to explore some of these in greater depth and make my own contribution, howsoever small, to those fields.

During my preparation for my B. Tech. Project, I read numerous research papers from Rice University. Thus my choice of Rice University for graduate studies is based on a careful examination of the information regarding the faculty members and the research currently going on in your school.

I look forward to joining your department as a graduate student. I am confident that graduate studies in Rice University will prove to be a rewarding task and I shall be able to fulfill my career objectives.

### **STATEMENT OF PURPOSE 23**

I am a final year student of the B. Tech. program in Computer Science and Engineering at the \*\*\*\*. My undergraduate study has given me a sound base in the whole gamut of fields in Computer Science and Engineering. Always strived to develop a clear understanding of the basic concepts and acquire an insight into the Science of Computing.

I have developed a keen interest in Database Management Systems, Real Time Systems, Operating Systems, Object Oriented Systems and related fields. I have excelled in academics at every step in my education. In my 12 years of schooling I always ranked first/ second in the class. I was also ranked FIRST in the Math's Olympiad at the State level. I was selected in top 1% of the examinees in the Physics talent search examination. In the entrance examination for \*\*\*\*, I stood 47th amongst 80,000 candidates.

I have done well throughout my undergraduate studies and have obtained top grades in the courses related to my areas of interest. This has resulted in my high GPA of 8.92/10.00 by the end of sixth semester.

The urge to obtain an in-depth understanding and specialized knowledge in my areas of interest, has made me opt for Graduate studies. I would like to follow up my graduate studies by taking up a research oriented post in either academia or research laboratories so that I can contribute my own bit to the ever-increasing knowledge in these areas.

I believe that working towards a Ph.D best does the initiation of the process of original contribution. I view the master's degree as an intermediate step in achieving this goal. Hence, I would like to take up an M.S. culminating in a Ph.D. as my immediate goal.

From my literature survey, I find that the research work in Computer Graphics at Cornell University is state of the art. The additional information I got from my correspondence with Prof. Greenberg and from my brother Rajendra Kolhe who is doing his Ph.D. at your university, have confirmed my belief that Cornell is the college where I want to pursue my Ph.D. The computer graphics program at Cornell is considered to be one of the best programs in the world in this field. Being part of such an excellent research team will be a big step in achieving my long-term goals. The highly competitive and intellectually stimulating atmosphere at Cornell University will bring out the best in me. This prompts me to apply for the program in Computer Graphics at Cornell University.

Keeping in view my background and career plans, I would prefer a research assistantship. This would give me a better opportunity to pursue my interest to the fullest. However, I would also like to have teaching experience for one semester. As I have studied in an English medium throughout and also have the experience of being a course assistant and a lecturer in two workshops, I am confident that I will be a successful teaching assistant.

In conclusion, I would say that I am very keen and enthusiastic about joining your university. I am sure that I will be able to justify to the fullest the confidence reposed in me.

#### **STATEMENT OF PURPOSE 24**

I have always cherished a career in research and training in Computer Science. I feel that graduate studies at a good university like yours in pursuit of a PhD would be a step in that direction. I am confident that I will be extremely successful both as a graduate student and later as a researcher and teacher.

Ever since I was in school, I was interested in Mathematics. My success at the Regional Math's Olympiad and The National Talent Search examinations boosted this interest. I was also introduced to programming in school and was fascinated by computers. With these interests Computer Science was the ideal choice as my undergraduate major.

The Computer Science and Engineering department at \*\*\*\* has a good faculty and a wonderful course structure. It is undoubtedly one of the best in the



country. The undergraduate curriculum here exposed me to all the basic areas in Computer Science and I have consistently performed well in all the core courses. I have always adopted a rigorous approach to learning and have tried to grasp the fundamentals of all the subjects. This is amply reflected in my GPA of 9.09 on 10(3.80 on 4) in a highly competitive class and in my position in the top 5% of my batch in the institute.

Over the past one and a half years I have developed an interest in the field of Programming Languages and Systems, especially compilers. I have performed well in the basic systems courses like Language Processors, Programming Languages, Database management systems and Operating systems (please refer the resume). I have also chosen as one of my electives for Spring 96 the course titled Foundations of parallel computation.

I am currently working on my B. Tech thesis – which is in the field of compilers – under the guidance of Prof. yyy. I am involved in the development of GENSAT – a generator for static analysis and transformation programs. We have already incorporated into GENSAT a framework to implement intraprocedural data flow analysis using bit vectors for the representation of data flow properties. I am extending this framework by providing for the usage of sets instead of bit vectors. This will make GENSAT a generic tool for solving monotone dataflow problems. I am also studying various techniques for interprocedural data flow analysis. My aim here is to abstract a framework in which these techniques can be implemented. In this process I will be modifying existing algorithms and possibly finding a new one.

My interests are well supported by my strong theoretical background. In my junior year I presented a home paper on the “Theoretical Consequences of the Ellipsoid Method”. I have audited (taken as non-credit) a Post Graduate course on algorithms titled “Current Topics in Theory and Algorithms” and I have currently taken another elective on the Design and analysis of algorithms. I have also done a course on Geometric Algorithms, which gave me a good exposure to Randomization in algorithms. I am confident that these and the other courses I have done will stand in good stead in any future research I undertake.

I have always loved solving problems. The pleasure obtained from being absorbed in problems over extended periods of time and finally arriving at solutions is immeasurable. Many times I have arrived at solutions that were very different from those of others. This unique bent of mind coupled with a desire to be at the forefront of a budding field drive me to pursue research. I believe myself to be mature, committed.

I have good reason to believe that I will be successful as a teacher. I have received enthusiastic response from my students when I was a course assistant in an undergraduate course titled “Computer Programming and Utilization”. I have also been a lecturer and tutor in two UNIX workshops conducted by our department at the institute level. Further, I believe that teaching a subject gives us greater insight into it.

I have chosen to pursue Graduate studies at New York University because the facilities there seem to foster a healthy research environment as I could gather from the brochure of your department.

I believe that I possess the motivation, the intellectual ability, and the preparation to set out on this exhilarating and arduous path, to do justice to a demanding Graduate program and to make significant contributions to the ongoing work at the Kansas State University.

### **STATEMENT OF PURPOSE 26**

I am a student of Computer Science and Engineering at \*\*\*\*. I wish to pursue a career in research in Computer Science. I would like to embark upon this venture through the Doctoral Program offered by the Department of Computer Science at Rice University.

My deep interest in Computer Science stems from a natural aptitude for logic and mathematics, the “queen of sciences”. I consider Computer Science not just as a field to pursue a research career in, but as a hobby. Throughout my undergraduate study, I have endeavored to gain a broad perspective of Computer Science. My fields of interest range over a wide spectrum of areas; however Programming Languages, Real-Time Systems and Parallel Processing especially fascinate me.

My training at \*\*\*\* has not only equipped me with a strong technical base but has also instilled in me a deep interest in research. During the course of my B.Tech. Curriculum, I have presented a seminar titled {bf “Selected Topics in Advanced Architectures”} under the guidance of Prof. yyy. During the summer of 1994, I had the rare opportunity of working at Bhabha Atomic Research Centre (B.A.R.C.), a forerunner of Parallel Processing in India. The training at B.A.R.C. has demonstrated to me how emerging technology when combined with ingenuity can be employed to solve apparently diverse problems in Physics and Medicine. I am currently working on my B.Tech. Project titled {State chart Simulation Using Binary Decision Diagrams} under the guidance of Dr. yyy. Despite the intense competition at \*\*\*\*, I have been consistent in my performance; with a Cumulative Points Index of (bf 8.83} I stand \$9\$ in a class of 33 students.

Study in the Department of Computer Science and Engineering at \*\*\*\* has demanded long hours of continuous work, self-motivated efforts and a considerable amount of group activity. It has given me several opportunities to participate in various departmental activities, albeit in a small way. Learning by myself and sharing my knowledge with others has always been of prime importance to me. I have limited Teaching experience from tutoring an elementary course on FORTRAN-77 for students of first year B.Tech. Program. I enjoyed the experience and would like to teach in future too.

I look upon graduate study as an avenue to refine my skills and give a direction to my research career. It would be my first chance to make fundamental contribution to the field in which I undertake research. The excellent research facilities at Rice University and the distinguished faculty are a great source of

inspiration to me. The emphasis on multidisciplinary seminars and research projects would definitely encourage me to explore other related areas within the realms of Computer Science.

I hope I fit in with your expectations of a promising graduate student. Admission to the Department of Computer Science at Rice University could well be that golden foundation upon which the entire edifice of my scientific career rests.

### **STATEMENT OF PURPOSE 27**

After carefully considering my aptitude, interests, the nature of my training and my ultimate professional ambition, I have decided to pursue Ph. D. in electrical engineering specializing in the fields of my interest namely- Communications, Signal Processing and Information Theory and Coding, ultimately leading to a career in teaching and research. As a statement of purpose of my graduate study, I describe here my academic background, my research interests and my career goals.

The undergraduate programme at \*\*\*\* is a well-rounded programme. It not only helped me build a solid foundation of Electrical Engineering fundamentals, but also helped me develop an overall perspective of the vast field of Electrical Engineering. In the final year I developed a keen interest in the areas of Communications and Signal Processing. I substantiated my knowledge of these areas by choosing electives on Digital Communications, Communication System Theory (Random Processes in Communications), Digital Signal Processing and Information Theory and Coding.

In the Master of Technology Programme, I specialized in Communications. Taking advantage of a fully flexible course structure, I have chosen electives on Statistical Signal Analysis, Applied Linear Algebra in Electrical Engineering, Theory of Error Correcting Codes, Image Processing and Adaptive Signal Processing. Apart from these, I have taken courses on two special topics in Electrical Engineering namely- Computational Vision and Artificial Neural Networks.

I have striven to perform well in the courses and have tried to gain as much as I could from them. But I feel that the real qualification of a good graduate student is his ability to perform independent research work under the guidance of an advisor. My B.Tech. (Final year) project under Prof. Yyy gave me such an opportunity. In my B. Tech. Project I studied convergence issues in Non-Symmetrical and Higher order Neural Networks. First part of the project has been submitted to IEEE Trans. Neural Networks as a brief paper. It has been accepted after review.

In my M.Tech Programme, I did a mini project on determination of rotation parameters of a lamina from its binary images using moment- invariants of the images. I did an intensive seminar (a survey of literature) on Simulated Annealing Algorithm for Optimization.

My M.Tech. Thesis deals with Information across Boolean Functions. It involves establishing relationship between complexity measures of Boolean

Functions and an attempt to study the nature of optimal circuit through restrictions of a Boolean function.

The project work and the course work have further interested me in Communication and Signal Processing and have motivated me to learn more of these areas. Also, the ideas involved in finding fundamental limits on capabilities of information extraction and transmission and the attempts at achieving the limits – which form the core of information theory – have interested me very much. I realize that techniques and the tools used there overlap. Therefore I have taken liberty to quote these broad areas as Research interests. Specifically the areas of my interest are Source Coding/Data Compression, Information Theory and Coding, Statistical Signal Processing, Digital Communication, Multi-user Communication, optimal filtering and detection and estimation.

I am also interested in the application of Neural Networks to these areas.

The Department of Electrical and Computer Engineering at UCSB is a well-known center of excellence. The department faculty consists of leading researchers engaged in frontline research. The research interests of the faculty are extremely compatible with those of mine, a fact underlined by the fact that some of the faculty members are pioneering people in their fields. In particular, I would like to work with the faculty involved with the Center for Information Processing and Research. I shall be glad to be a part of the group and witness and contribute my bit to the leading research being carried out at UCSB.

An opportunity to work in the stimulating environment at UCSB will certainly make the graduate study a rewarding exercise and a satisfying experience. In terms of research facilities also, a university like UCSB has more to offer to a graduate student. I, therefore, look forward to joining UCSB as a graduate student.

As professional goal, I would like to take up a career in research and teaching. From the residential system of \*\*\*\*, I have been able to have a glimpse of the academic life and the sacrifices it involves. I feel that it is this kind of life that I am best suited for. I feel that I have enough motivation to see me through the challenges of the arduous but exhilarating career in research.

I thank Prof. Yyy and Prof. yyy for their advice and valuable information.

## **STATEMENT OF PURPOSE 28**

### **Long Term Goals**

My undergraduate studies in the Department of Computer Science and Engineering at the \*\*\*\* has exposed me to a stimulating academic environment where learning and research go hand-in-hand. Through the many opportunities I have had here, I have found that I have a deep interest in research work and a strong aptitude for the type of problem solving and problem discovery that it involves. I have, therefore decided to pursue active research in Computer Science as a career.

### **Areas of Interest**

Of the many fields in the Computer Science spectrum, I am interested in computer systems. In particular, I am interested in Databases.

### **Immediate Goals**

I plan to work towards a Ph. D. with a focus on Databases. I would also like to follow up my interests in Computer Systems through my course work. I feel that this should be my next step on my road to a research career in Computer Science. I would be most willing to work directly for a Ph.D. if it is possible. However, I would be willing to do M.S. as a first step towards obtaining my Ph.D.

### **Academic Background**

Throughout 12 years of schooling, I had always been among the top ranking students in the class. I was ranked 47th out of 80,000 students (99.94%ile) in the national level entrance examinations to the \*\*\*\*. I was ranked 2nd in the state level entrance examinations for the state engineering colleges. Currently with G.P.A. of 9.00 on scale of 10.00, I am among the top 5% of the students of my batch in the Institute. This high level of consistency in my academic record makes me feel confident enough to hold my own against the very best.

### **Preparation for Graduate Study**

My undergraduate preparation at the Computer Science and Engineering Department of the \*\*\*\* has given me a very substantial knowledge of the basic areas of Computer Science. Any amount of learning in Computer Science would be incomplete without hands on experience of Programming. In this regard I completed various mini projects both out my own interest and also as a part of some of my courses

My senior year dissertation under Dr. yyy (Ph.D. Wisconsin Madison) is titled B+ -Tree Concurrency Control Algorithms in Real-time environment. Operations on B+ -Tree are crucial while maximizing concurrency in a Database System. In real-time environment in which each such operation has associated deadline it is more crucial. There are specialized algorithms for the purpose. As a part of the project, I will be doing performance evaluation of these algorithms. To consolidate my knowledge in my field of interest, I had credited the course Advances in Database Technology in the fall semester. The course involved the study of various classic papers in Databases. I presented a seminar on Main Memory Databases as a part of the course. I am also crediting a course on Distributed Databases in the spring semester. I am also an active member of SIGDB (Special Interest Group in Databases) of the institute, which keeps me fully informed about the latest development in Databases. I have presented some latest papers during its meetings.

### **Teaching Experience**

I was a teaching assistant for the freshmen's course CS101: Computer Programming and Utilization during Fall 93. I was also an organizer during UNIX workshops and C language workshop conducted by students of our department. This has made me confident that I will prove to be a very good teacher.

## **Reasons for selecting University of Wisconsin**

Your university is considered to be one of the best universities in databases Research. Your faculty has distinguished researchers in the field of databases. I am also familiar with some of the research papers published by them. My guide Dr. yyy, an alumnus of your university has encouraged me to apply here. As a result, I am very enthusiastic about joining your university for graduate Studies.

## **Summing Up**

I am aware of the hard work and perseverance necessary for research work and I know that it is not always as exciting as the published results seem to indicate. Nevertheless, I am sure that my aptitude and drive will see me through the challenge. Looking forward to joining University of Wisconsin at Madison.

## **STATEMENT OF PURPOSE 29**

I was first introduced to computers through the elementary programming courses in my school days. In my high school I took Computer Science as an additional subject. This fascination for computers lead me to the Department of Computer Science and Engineering at the \*\*\*\*, one of India's foremost educational institutes. The course structure, a good balance of theory and programming laboratories, and excellent faculty introduced me to the stimulating field of research. I got a complete exposure to the core fields of Computer Science and Mathematics. I started to enjoy the problem solving techniques and appreciate the pleasure of success after endless hours of frustrating work. All this has lead me to decide on a career of research and academics.

Ten years from now I envisage myself doing active academic research in a good university. I believe that teaching a subject is the best way of learning the subject. Hence my immediate goal is to enter the Ph. D. program at {Indiana University}. My main fields of interest are Distributed Systems, Real Time Systems and Concurrent Programming Languages}. Presently I am doing my B. Tech project under Dr. yyy on implementation of the Communicating Reactive Processes (CRP) model. In the first stage of the project I have studied the various distributed algorithms for Communicating Sequential Processes implementation and other related fairness issues. An impossibility result regarding the problem has been proved and an algorithm has been proposed. I am planning to shape this into a journal paper.

As part of the Operating Systems course I did a study of the Group Communication protocols in the Amoeba Distributed Operating System. Next semester I am crediting a post-graduate elective—Foundations of Parallel Computation. I am a student member of the IEEE computer society. I am also interested in Computer Architecture and had presented a home paper on the 6811 Motorola microcontroller.

My decision to apply to Indiana University is based on a careful examination of the department brochure, World Wide Web information and talking to my guide

Dr. yyy. Indiana has a strong faculty in Programming Language Design. Entering the Ph. D. program here will be ideal for me.

My academic record reflects that I have always been a consistent performer. In school I was always in the top five of the class and in the Secondary Certificate Examination I stood second in my school. I secured 126th rank in the All India Joint Entrance Examination for \*\*\*\*. At the end of my first year I was ranked 10th in the institute. After seven semesters I have a CGPA of 8.83/10.00 and I am in the top ten of my class.

I have been a tutor for a first year introductory course in Computers. This involved guidance of the students in the programming assignments and correction of papers. I enjoyed the experience and would love to teach. I also have been an organizer in UNIX workshops held in our department. I am a hardworking, steady and quiet person. My final aim is to be blissfully involved in Distributed Systems and Programming Languages. I hope I can join {bf Indiana University} and achieve my dream.

### **STATEMENT OF PURPOSE 30**

My objective for graduate studies in Computer Science is to prepare myself for the long-term goal of pursuing a career of teaching and research. I have nurtured a strong passion to become a scientist and pursue research. In the pursuit of Knowledge, I have always adopted a rigorous approach in order to attain an in-depth understanding of the subject at hand. This has amply reflected in my consistently brilliant career, always topping the class and having received numerous national level awards. With a GPA of 9.72, I am ranked first at the \*\*\*\* among nearly 350 students.

I have been involved in research in parallel and distributed computing systems. I studied various problems in distributed systems and distributed databases including deadlock detection and resolution, termination detection, distributed snapshots and consistency. I have been attracted towards the field of correctness of parallel programs. I published a Technical Report reporting errors in two published deadlock detection algorithms and highlight their underlying deficiencies with respect to the distributed nature of computation. I am also involved in the Development of an optimizer generator, which would automate the process of writing optimizers based on the specifications of the optimizations. I am currently engaged in writing a paper on an efficient algorithm for performing global data-flow analysis. The new algorithm that I have developed utilizes the notion of backward information flow to perform propagation using work-lists in an efficient manner. I have been in correspondence with Professor yyy about my algorithm and other aspects of the problem.

I have chosen to pursue graduate studies at Stanford University because by working under the guidance of the distinguished researchers I am confident of making an original contribution in the field of Computer Science. My interest in research has burgeoned during my undergraduate studies at \*\*\*\*. I have

excelled in our well-rounded and exacting undergraduate program and have developed a solid background to take up research in Computer Science.

I have decided to go in for graduate studies which calls for a personal commitment to the fulfilling craft of independent research and that involves willingly making personal sacrifices of time, leisure and immediate reward. In turn I shall get intellectual satisfaction and the gratification of becoming a contributor to knowledge through research and the greater personal rewards of learning and discovery. I believe that I possess the motivation, intellectual ability and preparation to set out on this exhilarating and arduous path and to make significant original contributions to your on-going research work.

I look forward to joining Stanford University as a graduate student at your esteemed department.

### **STATEMENT OF PURPOSE 31**

I am in the final year of the four year Bachelor of Technology program of the Computer Science and Engineering program of the \*\*\*\*. My career objectives lie in the pursuance of research and academics in theoretical computer science – especially in mathematical logic, automated theorem proving, program correctness and semantics of programming languages}. I believe that graduate studies leading to a PhD through research work of quality in these fields are a necessary step towards my goal.

The undergraduate courses of the CSE department of \*\*\*\* have given me a comprehensive exposure to all the core fields of computer science and mathematics. Man's attempts at mathematically modeling objects of study and then using these models to reason, predict, draw new meanings and interpretations have always fascinated me. Hence, in course of my Studies I've come to realize that I wish to pursue research and academics in the above-mentioned areas of theoretical computer science. These areas, I believe are rapidly developing and offer great scope to one who is confident of producing fruitful work and coming up with creative ideas.

I have performed reasonably well in my undergraduate courses at \*\*\*\*, but since \*\*\*\* admits only the best students throughout the country, I believe, in view of the competitive atmosphere, that the grades secured should not be considered in an absolute sense.

My interest in theoretical computer science has inspired me to carry out research and implementation in this subject, as can be seen from my attached resume. Simultaneously, I have kept myself abreast with the recent trends in research through literature surveys during projects, related to courses and otherwise. I have availed of every opportunity to learn more about my areas of interest. I have taken have enrolled for a number of relevant courses offered by the computer science, mathematics and humanities departments. My senior thesis (home paper) PROGRAM VERIFICATION USING ALGEBRAIC METHODS has given me a chance to explore these areas in greater depth



(details in resume). All these activities have gone a long way towards making my background very strong in my areas of interest.

I have also had a good deal of teaching experience as can be seen from attached certificates. This experience convinced that I have the communication skills and the ability to explain things precisely to become a teacher.

My years at \*\*\*\* have been enlightening ones but I need to constructively build up on what I've learned so far. Duke, I think is the ideal learned so far. Duke, I think, is an ideal choice towards this end. My decision was based on a careful examination of the department brochures and information from faculty members and alumni. I have also communicated with Dr.yyy, Director of graduate studies of the Computer Science department.

Duke has a stress on research-oriented study, flexibility and closer Professor-student relationships. I think that having such a sound academic environment at a reputed University such as Duke, with the work of a small group of teachers serving as a model, I will be able to attain my true potential. Specifically I am keen to participate in the ongoing research activity at Duke in the following fields:

Finding efficient proof procedures for first order logic theorem proving.

Reasoning in educational logics Program correctness and program transformation I look forward to making my contributions to the advancement of computer science – starting at Duke.

### **STATEMENT OF PURPOSE 32**

My undergraduate studies in the department of computer Science and Engg at \*\*\*\* have exposed me to a stimulating academic environment where learning and research go together. Through the many opportunities I have had here. I have grown to love research work and have found that I have a strong aptitude for the kind of work that it involves. I have therefore decided to pursue active research as a career. It is with this objective in mind that I wish to enroll for the doctoral program in your university.

I plan to study at the graduate level in the area of distributed computing, specifically the theory of asynchronous systems. I believe that theory and application in Computer Science go hand-in-hand. The study of theoretical aspects of distributed systems is essential for the successful development of applications for heterogeneous and fault-tolerant systems. The possibilities of research in this field fascinate me.

Recent research in the theory of asynchronous computation has yielded theorems describing the computability of tasks in asynchronous systems that can tolerate multiple failures. Attempts are also being made to completely characterize the power of various synchronization primitives in an asynchronous system. As part of my B.Tech project (senior thesis) under Dr. yyy I am currently working on extending these results to stronger synchronization primitives and exploring the possibility of utilizing some of these ideas to completely describe the power of concurrent objects. To further

my understanding of these problems I have also enrolled myself for the graduate level course, { Foundations of Parallel Computation} under Dr. yyy. I have excelled in academics at every step in my education. Throughout twelve years of schooling I have always been ranked among the top of my class. I was introduced to Computer Science in junior college. I was awarded the Merit Certificate for my performance in the All India Senior School Certificate Examination – 100\% in Computer Science, 99\% in Mathematics, Physics and Chemistry. I was also placed seventh in the state wide Physics Talent Test of the Physics Society, Madras. In the highly competitive entrance examination to the \*\*\* I was ranked 134th among over 100,000 students. The broad curriculum at \*\*\*\* provided me with a strong foundation in all branches of Computer Science. Of these I have pursued those, which have particularly appealed to me. During the summer of 1994, I worked on a 'learning' program for the gam {Othello} using Neural Nets that I had initially developed as part of my course work. For my seminar (junior thesis) I studied {smart recompilation and incremental parsing techniques} under Dr. yyy. Efficient implementation of these techniques can substantially reduce compilation time in large software systems.

I have also gained considerable teaching experience in \*\*\*\*. I have been a course assistant for the Institute level freshman course, Computer Programming and Utilization for two consecutive years. I have also delivered lectures and given demonstrations on UNIX at various workshops conducted by the Computer Science and Engg. Association. All of these have been well received and have made me confident of developing into a very good teacher. I have also taken the Test for Spoken English in November 1995 . I have worked for two months at ARCUS, Bangalore, and a company that develops VLSI tools and also for Rational, USA at their third party development centre in Bangalore.

My undergraduate program has given me sufficient exposure to various avenues for research and I have chosen Distributed Computing for which I have both an aptitude and a liking. A good graduate program is now essential for gaining a deeper insight and to make significant original contributions to this field. I am confident that I possess the motivation, intellectual ability and preparation to succeed in a demanding graduate program.

My interest in the theory of distributed computing makes UCLA a natural choice for graduate study. Professor yyy is one of the leading researchers in this field and I have studied his work as part of my ongoing thesis and he has encouraged me to apply to your program. Working under an expert whose work can serve as a model will set me on the path to contributing significantly to the ongoing research at UCLA. The research interests of the other faculty members cover a large number of topics in Computer Science and this will enable me to keep in touch with the latest developments in these fields. The excellent facilities offered by your department will provide an environment

conducive to successful graduate work. The faculty at \*\*\*\* has also strongly recommended UCLA for pursuing graduate studies.

I look forward to joining UCLA as a graduate student at your esteemed department.