Graduate School Information Kit for Women in Computer Science and Engineering

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Abstract

This kit is designed to guide students through the graduate school process. It includes advice and other information on the decision to pursue a graduate degree, the application process, and matriculation. Also included is information on the problems experienced by many women pursuing advanced degrees in Computer Science and Engineering (CS&E), and the strategies to improve the graduate school experience for them.

The kit contains information on:

- The advantages of obtaining an advanced degree
- Choosing the right graduate school
- The graduate school application process
- Financing graduate study
- Matriculation

1 INTRODUCTION

Computer Science and Engineering (CS&E) research has fueled numerous innovative and technological advances, resulting in the improvement of the quality of life for many. While women have made major contributions to these advances, they are underrepresented in the field. The 1992-93 Taulbee Survey found that only 9.7% of the faculty of Ph.D.-granting CS&CE departments are female and only 59 full professors are women (out of a total of 1042 full professors). Also, although women who choose technical disciplines as undergraduates are more likely to earn their bachelor's degree than men, women drop out of Ph.D. programs at twice the rate of men.

The objective of this graduate school information kit is to encourage more women to pursue an advanced degree in CS&E and to help them better understand the graduate school experience so that they will be more likely to succeed. Included is some discussion of the problems experienced by female graduate students and strategies to improve the graduate school experience for them. Also included is advice on the steps needed to obtain a graduate degree, focusing on the experiences many women encounter as part of this process, and an examination of the reasons for obtaining an advanced degree, the application process, and matriculation. The process used to obtain a graduate degree in CS&E can vary widely from department to department. Included here are some general guidelines regarding this process. Your specific department will include some, but possibly not all, of these requirements.

The next section discusses the advantages and disadvantages of pursuing an advanced degree in CS&E. Section II includes information on how to choose a graduate school and Section III offers advice on choosing the *right* graduate school. Described in Section IV is the graduate application process and Section V presents information on graduate financial aid. Finally, Section VI discusses graduate school matriculation, including the M.S. and Ph.D. requirements, choosing the right advisor, and the problems many women face while in graduate school.

2 WHY GRADUATE SCHOOL

There are many reasons for deciding whether or not to attend graduate school. The reasons vary from individual to individual and are based on many factors including, but not limited to, career goals, lifestyles, family commitments, personality, and financial and other constraints.

Having an advanced degree will generally result in earning higher salaries over the life of your career. A report in the *Electrical Engineering Times*, October 1991, showed that median annual salaries for M.S. and Ph.D. engineers are substantially higher than those for holders of the B.S. degree (median salaries: Ph.D.

$72,500, M.S. $58,870, B.S. $52,100). However, the decision to attend graduate school may not be based solely on the monetary benefits. Graduate school provides training in research. Attending graduate school facilitates the student's ability to advance the state-of-the-art in their chosen CS&E area through cutting edge research. Also, a graduate degree gives the holder more credibility amoung peers.

Another advantage is the fact that an advanced degree adds depth and breadth to one's academic background which may improve your chances of obtaining a job or your job performance if you already have one. It allows you to have more flexibility in choosing projects and it provides you with the expertise needed for increased levels of responsibility. An advanced degree is viewed as a distinguishing criteria for separating job seekers in the applicant pool and it provides research and writing experiences vital for launching one's career onto the "fast track.". Over the life of one's career, these are the attributes which often make the critical difference in job satisfaction, and lifetime earnings. Also, some jobs require an advanced degree. For example, if you plan to teach or do research at an academic institution, a Ph.D. is usually required (certainly a Masters).

One of the disadvantages of attending graduate school is the fact that the marginal gain of a few thousand dollars a year may not offset the compensation you would earn if you do not attend graduate school. It typically takes 1 to 3 years and 5 to 8 years to obtain an M.S. and Ph.D., respectively, in CS&E. The longer the stay in graduate school, the greater this monetary disadvantage. You may never recoup the monetary losses resulting from attending graduate school. Also, the amount of money you earn for a living while a graduate student is considerably less than the amount you would earn while working on a job. This may be a serious disadvantage if you have others to support. Also, graduate school is very demanding and it requires discipline and focus. It is a humbling experience and it is also very stressful. It may be more stressful for women. If you do not have the personality, coping mechanisms, and/or an effective mentor, you may be overwhelmed.

There are many other advantages and disadvantages to pursuing an advanced degree in CS&E. One important factor to consider is your ability. You should conduct a realistic assessment of your chances to successfully complete a degree program. Your professors can help you with this assessment. Ultimately, the decision is yours, based on your situation. Included in this section is a self-assessment form to help you make this decision.

3 CHOOSING THE RIGHT GRADUATE SCHOOL

Once the decision is made to attend graduate school, there are many factors to consider when determining what school is right for you. You should make a realistic assessment of your abilities and determine the areas of CS&E that interest you the most. You may not be able to make a realistic assessment yourself, as some women tend to underestimate their abilities. Get to know as many of your undergraduate course professors as possible, particularly in the technical areas that interest you. It may be possible to conduct research with a professor while an undergraduate. Research experiences for undergraduates (REU's) and the CRA Distributed Mentor Project (REF) are examples of programs that sponsor this type of activity. Look into these programs and take advantage of the opportunities they offer. Experience gained from this type of activity can be a major selling point when applying to graduate school. Also, the supervising professor can more readily access your ability to do research.

Also, get to know the graduate students, particularly the teaching assistants, if they are present at your school. A good way to interact with professors is to take advanced undergraduate courses and even, if possible, introductory graduate courses in your area of interest and in other areas. (This will also add depth and breath to your background). Then go to these professors and graduate students and discuss your desire to attend graduate school. Get their opinions on how well they think you would do. They can make recommendations regarding what schools you should apply to, based on your abilities and interests.

If you are working, then you can seek advice from co-workers or others in your company who have earned graduate degrees in CS&E. It is preferable to seek those who are most familiar with your abilities. Also, many human resource departments classify and rank CS&E graduate programs for recruitment purposes. You may want to give a higher priority to highly classified and highly ranked schools. You may also want to enroll as a part-time student at a local university and take a few courses in your area of interest to provide more depth and breath to your background. In this case, get to know the teachers of these courses. They can also advise you on graduate schools, particularly if they know your abilities.

Graduate programs vary widely in size, cost, supportive environments, reputation, and style. You should seriously consider the type of program in which you would excel, weighing all of your options. Some questions you should ask yourself include the following:

- In what type of academic climate do I wish to study?
- What type of degree am I seeking?
- What are my academic credentials - research abilities, writing skills, GPA, test scores?

- What are my financial needs?

After you have made a personal assessment, based on advice from professors, graduate students, and/or co-workers, and based on your own knowledge of your abilities, you should make a list of schools that are right for you. This list may include schools in one of three categories: 1) highly selective dream schools, 2) schools in which you have a good chance of acceptance, and 3) schools that accept the overwhelming majority of applications (99%). While it is not necessary to have schools in all three categories on your list, this list should not include schools in only one of these categories. This should improve the probability of acceptance into at least one graduate program.

Once you have a list of schools, you should gather as much information about them as possible. For each school, list its location, size, type (major state or private university), the cultural, social, and academic environment of the campus, the percentage and number of women in the CS&E graduate program, the percentage and number of female faculty members, the academic calendar (semester or quarter), and the financial aid packages available. Four areas which should be your guide in making an analysis include the program's national reputation, the degree requirements, financial support, and system support.

Where you do graduate work is important, since the reputation of the institution can add to or subtract from the value of your credentials upon completion. The national reputation of a school is determined by the quality of its faculty, library holdings, research facilities, and the success of its graduates. Two sources to consult for comparative rankings of programs are the *Gourman Report* and periodic surveys published in the *Chronicle of Higher Education.* For descriptive information on degree offerings, enrollment, number of graduates, admission requirements, academic calendar, faculty size, etc., the *Directory of Graduate Programs*, published by the Education Testing Service, Princeton, NJ 08541, is a good source. Also, the Association of Computing Machinery (ACM) publishes a gradaute school directory entitled *1994-95 Graduate Assistantship Directory in Computing.* Hardcopy order information on this directory can be obtained from the world wide web (WWW) using the URL http://info.acm.org/catalog/educ/grad.html. All of these publications should be available in most university libraries.

Prerequisites for entering specific programs and requirements for graduation are major determinants of expectations and length of time for completion. With this in mind, a careful review should be made of what is required, recommended, or optional in terms of: 1) course hours; 2) thesis/dissertation; and 3) residency.

The campus environment - the place where a student lives, studies, and gains intellectual prowness - must be conducive to self-determination and self-fullment, and it must allow for personal and academic growth. Thus, areas such as living accommodations for graduate students, cultural and social outlets, and collegiality of association are all critical factors in the assessment of each institution. One important feature

of graduate education - a feature that makes it uniquely different from undergraduate studies - is the close working relationship formed between the student and the thesis/dissertation advisor. The uniqueness of this relationship is such that it is imperative that: 1) the graduate program have a history of advising, mentoring, and graduating female graduate students; and 2) the department be recognized as a place known for its appreciation and support of the intellectual capabilites of female students.

Other questions to ask about the graduate program you are considering include the following:

- Does the faculty exhibit special strengths and research qualities through their graduate advisees, published works, and funded research?
- Are the libraries, laboratories, computers and other research facilities adequate for you education needs?
- Are the graduates of the program sought by recruiters? Does the department of interest offer sufficiently large and varied curriculum to allow you a broad offering of courses and options?
- How senior are the professors in your area, what are their interests and what will their availability be?
- What are the degree requirements? Number of hours required? Will I have to do a thesis/dissertation?
- What is the completion rate of the general graduate population? The female graduate population?
- How long will it take for me to complete my program?
- Are study space/office carrels available for graduate students?

Furthermore, you should take advantage of graduate program career fairs. These events provide you with an opportunity to learn more about the specific programs by talking with program representatives. They also provide you with the opportunity to gather information to compare the various programs on your list. Once you have collected as much information as you can about the schools on your list, you should narrow the list down to a handful of schools and then start the application process.

4 THE GRADUATE SCHOOL APPLICATION PROCESS

The application process consists of writing letters to the graduate programs to request application materials, completing and submitting the application materials prior to the deadline, and then sending letters of acceptance or rejection once you are admitted to a program. You can begin writing letters requesting application materials as early as the summer before the last academic year before you matriculate as a

graduate student but no later than September. In this letter you should include a statment about your interest in applying to the graduate program of the particular department, a request for detailed information about the department, and a request for all application materials, including financial aid. You should also start organizing a file of information about this process. There should be one folder for each school to which you apply and a folder for your transcript(s) and GRE scores.

The graduate school application generally includes an application, your personal statement, transcript(s), GRE scores, and letters of recommendation. The objective of the graduate committee that reviews these applications is to access and quantify your ability to conduct a successful research program within the department. Therefore, your application preparation and presentation should show a professional set of credentials that make the case for admission. This includes using a clear, concise, and coherent writing style and the completion of all parts of the application as directed.

Before you complete the actual application, read it thoroughly and make sure you undertand everything that is requested of you. Make a copy of the application and then think about each item before completing it on the copy. Make sure your responses reflect your interest, qualifications, and motivation to pursue an advance degree. Once you have completed the application, proofread it, first to make sure you are satisfied with the expression of your ideas, and second to check for grammatical soundness and correctly spelled words. Then you can complete the actual application, using your copy as a guide. When the actual application is complete, review it for both content, grammar, and spelling.

Official transcripts are usually required when submitting an application. Your undergraduate institution will usually send the official transcript directly to graduate admissions. However, before this occurs, obtain an unofficial copy of your transcript and make sure it is correct. Also, you should request the official transcript well in advance of the application deadline. This gives you time to correct any problems you may encounter in this regard before the deadline. Results for the Graduate Record Examination (GRE, Educational Testing Service, P.O. Box 955, Princeton, New Jersey, 08540, (609) 921-9000) are required by many, but not all, CS&E graduate admissions programs. Many schools not only require the general GREs (verbal, quantitative, and analytical tests), but also an advanced GRE. Advanced GREs are offered in computer science, math, and electrical engineering (as well as many other fields). The GRE office will send you information about these advanced tests with sample exam questions. The GRE can be taken late in your junior year but no later than the fall of your senior year. Make sure that the schools to which you are applying that require GRE scores are included in the list of schools, agencies, etc., that will receive your scores.

A very important component of the application is the personal statement. This statement gives you the oppourtunity to elaborate on your motivation for wanting to pursue an advanced degree, your interests in the

graduate program at the specific school, your technical area of interests, and your professional goals. This gives the graduate admissions committee the ability to access your ability to conduct a successful research project in the enviroment present at the school, including your thinking ability and your writing skills. You should include in your personal statement any background work that will help you successfully complete a graduate program. If you had any research experiences as an undergraduate in CS&E that you loved, describe them. Also, if you did any independent study in your technical area of interest under a professor, describe this. Also explain why you are interested in the given technical area, and why you think you should be admitted. Also, describe any relevant accomplishments; this is not the time to be modest. The length of your personal statement should be reasonable. Many schools limit the length to one typed page or 500 words. In these cases, make sure you work within these guidelines. It is wise to write a rough draft of this statement and have at least two of your professors or co-workers critique it. Once you are satisfied with its contents, proofread it thoroughly before transferring it to the actual application.

Another important component of the application is the letter of recommendation. Many graduate admissions programs require two to three letters of recommendation. Approach professors who know you and your abilities. It is VERY important that all of your letters of recommendation are positive. You should ask the potential letter writers if they would give you a positive recommendation. While this may be awkward and difficult to do for some women, it is imperative that you know that positive letters of recommendation are included in your total application. Otherwise, you may have excellent credentials, stellar GPA and GRE scores, a concise and well-written personal statement, but a negative letter of recommendation from a well-known and respected researcher in your area of interest. You will probably not be admitted to the graduate program. Also, give the letter writers all the pertinent information needed to write an effective positive recommendation such as a resume and your personal statement. The name and address of the school to which you are applying, your technical area of interest, and the application deadline should be known to the writer. Also, supply the letter writer with a correctly addressed, stamped envelope to send the letter. Make your request known to the letter writer well in advance of the application deadline. Approximately two weeks before the deadline, follow-up with the letter writer to make sure the recommendation has been sent.

Once you have completed the entire application, review it thoroughly and make copies of everything before mailing it. Since the postal service does not guarantee delivery, having a copy of the application will expedite the re-application process if needed. Some graduate applications include a postcard that is used to notify you of receipt of the application. Be sure to include your address on this card and postcard postage. If an application does not include such a postcard, it is a good idea to include one yourself. This postcard

may include the statement "the Department of CS acknowledges receipt of the application of Jane Doe" as well as space for a date and signature. To verify that the entire application package has been received, you may want to include this type of postcard with the application you send, as well as the transcript and the letters of recommenation sent by others. The Educational Testing Service will inform you when your GRE test scores are sent to the schools you have chosen. Make a copy of the application and place it in the file folder you have for the specific school. When you receive the postcards, also place them in this folder.

Graduate admissions usually notify you of their decision by March or April of the academic year prior to your matriculation. When you are accepted into a graduate program (especially more than one program), a primary factor to consider is the financial aid package offered to you (this is discussed in detail in the next section). This is also the time to think seriously about the offers. You may want to go to your professors or co-workers again and ask for their advice. They will be pleased that you have been accepted into a graduate program and more likely than not, they will be more than happy to offer advice on the reputations of the specific programs. Also, try to find someone who has graduated from the graduate program of that department and seek their advice and discuss with them their experiences. You should make your decision in a timely manner. Once this is done, you should notify your school of choice of your decision to accept and of your intention to enroll. You should also notify the institutions you did not choose and thank them for considering your application. A timely response is important because the schools you did not choose will quickly offer this slot to someone else.

5 FINANCING GRADUATE STUDY

Funds for graduate study are available; however, you must be diligent in searching for and applying to the various programs. There are numerous sponsorship, research, institution, and fellowship dollars available. You should make a list of all the graduate funding programs available. Seek advice from the career counseling and placement center and the graduate financial aid office at your undergraduate institution. You can also seek advice from the graduate financial aid offices of the schools to which you apply. Read graduate study announcements and department bulletin boards. Talk to faculty. Go to the reference section of your school's library or of your local public library. There is generally a plethora of information available in these reference sections on graduate financial aid. Included in Appendix I is a list of some of the references available on graduate financial aid in CS&E. Also, included in Appendix II is a list of graduate fellowships available to women in CS&E.

There are two basic types of graduate school aid available; fellowships and assistantships. A fellowship is

a form of financial aid that is similar to a scholarship. It is a grant of money for which no work is required, and can cover all or part of tuition, and it may include an additional stipend for living expenses. Fellowships are awarded based on merit and they may be offered by universities but most are through organizations outside the university such as private industry, foundations, and the government. Many corporations that sponsor fellowships also provide paid summer internships. There is usually no requirement to work for the company after graduation; however, a successful internship may result in an offer of permanent employment.

An assistantship is a form of financial aid in which the student is required to work. The work is often related to the student's studies or areas of interest. There are two types of assistantships; research (RA) and teaching (TA). RAs pay the student to assist a professor in an experiment or a research project. To be chosen as a RA is prestigious and an RA has several advantages. You are directly associated with an ongoing research project. You may be able to formulate your thesis or dissertation topic as a result of the work. You may also be able to conduct some of the research for your thesis. Another advantage is the fact that you are working with someone who may be well respected in the field. Any published papers that result from the work will include your name associated with this respected individual. If these papers are presented at a conference, you may have the opportunity to present the work and make contact with others working in the field. TAs pay the student to assist in a professor's course or to teach low-level undergraduate courses. Assisting a professor may require grading problem sets or examinations, overseeing laboratory courses, teaching tutorial sessions related to the course, and/or providing office hours to explain problems relating to the course. Most graduate students in CS&E are supported by assistantships available through the department. They are usually awarded based on merit (academic potential and performance as assessed from your application).

You should gather information about graduate aid during your junior year or the summer preceding your senior year. Many programs have early deadlines (November or December of your senior year) so you should request application materials during the summer and no later than September of your senior year. Funding can only be awarded to those who apply. Many programs do not have an effective program for finding you so you must be diligent in finding them (in fact, many funding programs do not award as much aid as they would like to because students do not apply). Apply to as many programs for which you are eligible to apply. Once again, make copies of everything before mailing and add the copies to your file.

6 MATRICULATION

It is important that you understand the academic standards for graduate students at your chosen school and also the actual process required to obtain your advanced degree. Most graduate programs use the A-B-C-D-F grading system and a "pass" of "fail" evaluation to rate your research efforts. A minimum grade of C is usually required to continue your graduate work and an overall GPA of a B is required to earn your degree.

To obtain your Master's degree, schools may require coursework only or coursework and a thesis. You may also have a choice between the two. A thesis is a research document that is presented as one of the final fulfillments for obtaining a Master's degree. (It is sometimes used interchangeably with dissertation, referring to Ph.D. research. However, more often thesis refers to work more limited in scope). Your decision to pursue graduate work with or without the thesis option depends upon your career goals. If you plan to obtain an M.S. degree and then go work in industry, then the coursework option may work best for you. On the other hand, if you plan to obtain a Ph.D. (even if you plan to take a break between getting your M.S. degree and starting in a Ph.D. program) then you should choose the thesis option. Even if the graduate program does not require thesis work, if you plan to pursue a Ph.D., then it is advisable to do an independent study program and pursue reasearch with a professor as part of your degree requirement.

In M.S. programs that only require course work, there is usually a requirement to take a number of depth courses in your area of interest, as well as some breadth courses for completeness. You may also take a few additional courses, including an option to do independent study or complete a minor. M.S. programs that require a thesis also require you to take depth and breath courses in CS&E. You are also be required to have a research committee that oversees your research. This committee should include your advisor (see the discussion on choosing the right advisor below) and others in your chosen area and some outside your area. Different schools have different procedures for selecting members of this committee. They range from permitting you to select all of the members of your committee, following certain guidelines, to having members of the department and the graduate school appoint members of your committee. You may be required to present a proposal to this committee. The proposal is generally a description of the type of research you wish to pursue and a presentation of some details about how the work will be conducted and the results you hope to achieve.

Once you have completed your research work and you have completed or are near the completion of the writing of your thesis, you may be required to defend your work. The defense make take one of several forms, such as a lecture on the thesis topic, a formal oral examination of your work or some combination of the two. In most instances, you will be required to discuss your work, including your methodology, results,

and conclusions. You are then questioned about the accuracy of these results and their significance to the field. Once you have passed this defense and completed the required coursework, you have completed all the requirements to obtain the M.S. degree.

In addition to breadth and depth coursework, a Ph.D program typically requires the student to pass a Ph.D. qualifying examination (also called a general or preliminary examination). This exam tests the depth and breath of the graduate student's knowledge in her or his discipline. It may be written, oral, or both and each student prepares for it independently. This exam is usually taken after the completion of coursework; however, many graduate programs require that you take this exam the first year of your graduate program. Once you have passed your qualifying exam, you can begin work on your dissertation.

A Ph.D. student is usually required to present their dissertation proposal to the research committee. The student's disseration is an independent project under the leadership of the research advisor. It varies in form and length, depending on the technical area and the type of research involved. The dissertation is designed to show a mastery of the subject matter and of research tools. It should contribute something new to the field. The entire process can take 3 to 5 years to complete (after obtaining the M.S. degree). Once the research is completed and a rough draft of the dissertation is written, the student is usually required to conduct a defense (or oral exam) of the work. After passing this exam, the student usually has completed all the requirements to receive the Ph.D. degree.

A major figure in the life of the graduate student is the research advisor. The relationship you establish with your advisor is one of the most vital aspect of you successfully completing the graduate program. Therefore, it is of utmost importance that you do your homework when selecting an advisor. There are four basic questions that should serve as a guide to you in selecting your advisor. First, ask if the faculty member is in a position to share her or his time and advice. Graduate level faculty are expected to accept new doctoral students; however, because of tenure status, research or resource constraints, and other factors, they may not be willing to take on additional students, or you may not want to take them on as an advisor. If your potential advisor does not have tenure but is up for tenure review in two years, then it may not be a good idea to have this person as an advisor because the individal may not get tenure. As a result, they may be required to leave while you are in the middle of your research program. It may be possible to assess the faculty member's tenure prospects by talking with various faculty members within the department. You may want to seek their advice and opinions before making your decision.

Second, you should determine if the faculty member has a reputation for producing quality research in a timely manner. A part of the thesis process and a major part of the doctoral process is the development and completion of an original research project that is worthy of publication in conference proceedings or

journals in your technical area. Your advisor's research expertise and laboratory output will be crucial to your research productivity. Also, having an advisor with a good reputation in the field will be beneficial to you when completing your studies (particularly for those in Ph.D. programs). A well known advisor will result in an increased marketability for academic and other research positions upon graduation.

Third, you should determine if the faculty member's current research area is of interest to you and in keeping with your graduate study goals. If your research interests are totally opposite from those of the faculty member, then this is probably not a good choice. An effective research alliance requires commonality of interest. If you find that you have a good rapport with a faculty member who is not conducting research in your area of interests, then you may want to establish a mentoring relationship with that faculty member. For example, you may be able to obtain professional advice from this faculty member.

Fourth, you should determine if the faculty member is sensitive to the concerns and problems many women face as a graduate student. The small number of female graduate students in CS&E sometimes result in feelings of isolation. Women also encounter a number of other problems which fall disproportionately within a woman's domain. Ideally, you may wish to have an advisor who is aware of the unique problems you may encounter and who will provide a supportive environment for you. However, this may not be the case. In such instances, you should seek supportive mechanisms elsewhere.

As stated abovesaveny women encounter problems in graduate school in CS&E that are unique to their gender. If you do not find a supportive mechanism during your matriculation, it may be very difficult for you to complete your degree requirements. You should do some research to determine if the department or the graduate school in general provides some means of support and encouragement. For example, there may be a formal Women-in-CS program that pairs female faculty, other sensitive faculty members, or more advanced graduate students with new women graduate students for mentoring or other support. There may also be informal programs where female graduate students and/or faculty meet on a regular basis (for example, lunch once a month) to discuss problems and other issues they encounter, and also to discuss their technical work. Some CS&E departments provide some kind of support for the special needs of female graduate students such as child care. If you are not aware of these programs when you arrive, ask about them. If they do not exist in your department, you may want to start an informal group. If there are few women in your department, you may try getting together with women in other technical disciplines such as engineering or the physical sciences.

7 CONCLUSION

Earning a graduate degree in CS&E can be a very empowering process. It is possible that the intense intellectual enlightenment associated with this process may not be repeated at any other point in your life. It can be a very exciting time. However, it is also a humbling experience that can be very stressful. This kit outlines the graduate school process for women in CS&E. The overview presented here is designed to educate you on this process, and to highlight some of the advantages and disadvantages of pursuing a graduate degree. Also discussed are some of the formal and informal programs you can use to provide a supportive environment that is conducive to conducting a successful independent research program while enjoying your life.

8 ACKNOWLEDGEMENTS

I would like to thank Howard Adams of the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM) for giving me permission to use excepts from his minority student graduate school information kit entitled *Negotiating the Graduate School Process.* I would also like to thank Gail A. Alverson, Phil Agre, and the women of systers (an electronic support group for women in computing) for giving me summaries of advice from the experiences of a number of women and other graduate students. I want to thank Dror Feitelson for advising me on the specifics of LaTEX. Finally, I want to thank Mary Jane Irwin and Dian Lopez for their valuable comments on the review of preliminary versions of this document.

ORGANIZATION	ELIGIBILITY	AMOUNT
American Fellowships American Association of University Women Educational Foundation 1111 Sixteenth Street NW Washington, D.C. 20036-4873 (202) 728-7603	Awarded to women for dissertation or postdoctoral work. No restrictions are placed on the place of study, field of study or age of the applicant. Candidates are evaluated for scholarly excellence as well as their commitment to helping women and girls through service in their community, profession and/or field of research. Candidates must be U.S. citizens or permanent residents.	$20,000 - $25,000.
Dissertation Fellowships American Association of University Women Educational Foundation 1111 Sixteenth Street NW Washington, D.C. 20036-4873 (202) 728-7603	Awarded to women who will complete the writing of their dissertations between July 1 and June 30 of the next academic year. Applicants must have completed all course work, passed all preliminary exams, and have their dissertation research proposal (or plan) approved by November 15 of the current academic year. Candidates must be U.S. citizens or permanent residents.	$13,500 for 1 year.

Dissertation Fellowships for Doctoral Candidates in Engineering American Association of University Women Educational Foundation 1111 Sixteenth Street NW Washington, D.C. 20036-4873 (202) 728-7603	Awarded to women who have completed all course work and passed all preliminary exams by November 15. Candidates must be U.S. citizens or permanent residents.	$13,500 for 1 year.
International Fellowships American Association of University Women Educational Foundation 1111 Sixteenth Street NW Washington, D.C. 20036-4873 (202) 728-7603	Awarded to women for full-time graduate or post-graduate study or research in the United States. Applicants must hold the equivalent of a U.S. bachelor's degree before December 1 of current academic year. Upon completion of studies, fellowship recipients MUST return to their home countries to pursue a professional career. Candidates must NOT be U.S. citizens or permanent residents.	$14,000 for 1 year.
Selected Professions Fellowships American Association of University Women Educational Foundation 1111 Sixteenth Street NW Washington, D.C. 20036-4873 (202) 728-7603	Awarded to women in designated fields where female participation has traditionally been low. Fellowships are available for the final year of a master's degree in the fields of Architecture, computer/information science, engineering, mathematics, and statistics. Candidates must be U.S. citizens or permanent residents.	$5,000 - $9,500 for 1 year.

Graduate Research Program for Women AT&T Bell Laboratories Room 1E-209 101 Crawfords Corner Road P.O. Box 3030 Holmdel, NY 07733-3030	Provides financial support for outstanding women students who are pursuing full-time doctoral studies in numerous technical disciplines, including computer science and engineering. Applicants must be U.S. citizens or permanent residents.	Full tuition, annual stipend of $13,200, books, fees, and related travel expenses. Also available are $1,500 grants.
Business and Professional Women's Foundation 2012 Massachusetts Avenue, NW Washington, DC 20036 (202) 293-1200	Loan funds awarded to women in their final two years of any engineering program. Candidates must be U.S. citizens, must demonstrate finance need, and must have a good academic record.	Up to $5,000 for 1 year.
Career Advancement Scholarship Program Business and Professional Women's Foundation 2012 Massachusetts Avenue, NW Washington, D.C. 20036	Non-traditional female students with critical financial need who are seeking the education necessary fo entry into, re-entry into, or advancement within the work force. Candidates must be U.S. citizens.	$500 - $1,000 for 1 year.
CFUW Memorial Award Canadian Federation of University Women 55 Parkdate Avenue Ottawa, Ontario, KIY 1E5 (613) 722-8732	For graduate studies in science and technology.	$1,000 for 1 year.

Dr. Marion Elder Grant Fellowship Canadian Federation of University Women 55 Parkdate Avenue Ottawa, Ontario, KIY 1E5 (613) 722-8732	The candidate must be a full-time student at the Master's or doctoral level, in Canada or abroad. All else being equal, preference is given to the holder of an Acadia University degree.	$8,000 for 1 year.
Beverley Jackson Fellowship Canadian Federation of University Women 55 Parkdate Avenue Ottawa, Ontario, KIY 1E5 (613) 722-8732	The candidate must be over the age of 35 at the time of application and enrolled in graduate work at an Ontario university.	$3,500 for 1 year.
Margaret McWilliams Predoctoral Fellowship Canadian Federation of University Women 55 Parkdate Avenue Ottawa, Ontario, KIY 1E5 (613) 722-8732	The candidate must have completed at least one full calendar year in doctoral level studies at the time of application. She may be studying abroad. She must be a full-time student.	$9,000 for 1 year.
Professional Fellowship Canadian Federation of University Women 55 Parkdate Avenue Ottawa, Ontario, KIY 1E5 (613) 722-8732	The candidate must be enrolled in graduate work below the Ph.D. level. She may be studying abroad.	$4,000 for 1 year.

Julia Kiene Fellowship Electrical Women's Round Table, Inc. 50 W. Broad Street, Suite 1331 Columbus, OH 42315	Graduate work in fields related to electrical living	$2,000 for 1 year.
Graduate Fellowships Clare Boothe Luce Fund	Highly qualified women who are doctoral candidates in the fields of science and engineering. Candidates must be U.S. citizens.	The recipient's institution submits the application and suggests the award amount.
National Association of University Women Attn: Fellowship Committee P. O. Box 1452 Laurinburg, NC 28353	Awarded to minority and other women who are working on a doctoral degree. Open to women who already hold a master's degree and are enrolled in a program leading to a doctoral degree. They should be close to completing their degree.	$2,500 for 1 year.

Graduate Fellowships for Minorities and Women National Physical Science Consortium New Mexico State University Box 30001, Dept. 3NPS Las Cruces, NM 88003-0001 (800) 952-4118 (505) 646-6038 (505) 646-6097 (FAX)	Women and minorities who are U.S. citizens and are eligible to pursue graduate study at a participating NPSC university. Entering or returning students are eligible.	$150,000 - $180,000 for 4 years.
NSF Graduate Fellowships Oak Ridge Associated Universities P. O. Box 3010 Oak Ridge, TN 37831-3010 (615) 241-4300	Awarded to women, minorities, the disabled and others interested in working on a master's or doctoral degree in several disciplines, including computer science and engineering. Must be a citizen or national of the United States and have not completed more than 20 semester/30 quarter hours (or equivalent) in the field of study.	$14,000 per year.
National Science Foundation Women in Engineering Graduate Fellowships Oak Ridge Associated Universities P. O. Box 3010 Oak Ridge, TN 37831-3010 (615) 241-4300	Available to women who have completed no more than 30 semester hours, 45 quarters, or equivalent of graduate study in the science and engineering fields supported by NSF since completion of their last baccaluareate degree in science or engineering.	Tuition and fees, $14,000 annual stipend, and $1,000 international research travel allowance.

International Peace Scholarship P.E.O. International Peace Scholarship Fund P.E.O. Executive OFfice 3700 Grand Avenue Des Moines, IA 50312	Must be a woman who is qualified for admission to full-time graduate study; working toward a graduate degree in the college or university of her choice in the United States or Canada. Also, must NOT be a citizen of the United States or Canada.	varies
Schlumberger Engineering Fellowship Program Schlumberger Well Services P.O. Box 2175 Houston, TX 77252-2175 ATTN: MD-1J3, Agnes Dillard, Personnel	Available to women and minorities pursuing graduate work leading to a masters degree in electrical engineering, mechanical engineeering, and computer science and engineering. Candidates must be U.S. citizens, permanent residents, or student visa holders with practical training visa's.	Full tuition, fees and a monthly stipend of $1,000 during the academic year through the master's level or to support doctoral work.
Sigma Delta Epsilon Fellowships Sigma Delta Epsilon, Grad. Women in Science, Inc. P. O. Box 19947 San Diego, CA. 92159	Awarded to women conducting graduate and postdoctoral research in the natural sciences, including computer science. Must have a degree in science.	$1,500 - $4,000 for 1 year.
General Motors Foundation Scholarship The Society of Women Engineers United Engineering Center, Room 305 345 East 47th Street New York, NY 10017 (212) 705-7855	First year master level student with a declared major in one of the engineering disciplines.	$1000 for 1 year.

Olive Lynn Salember Scholarship The Society of Women Engineers United Engineering Center, Room 305 345 East 47th Street New York, NY 10017 (212) 705-7855	Women who have been out of the engineering job market a minimum of two years. The objective is to assist the women in obtaining the credentials necessary to re-enter the job market as an engineer. Recipient may be any year undergraduate or graduate.	$2000 for 1 year.
Graduate Fellowship Award Fellowship Committee Soroptimist Foundation of Los Angeles P. O. Box 1382 Alhambra, CA 91802	Women who are residents of the state of California. Must be enrolled in a graduate degree program (Master's or Ph.D.) at an accredited institution of higher education in Southern California	$3,000 for 1 year.
XEROX Special Opportunity Fellowship Program Palo Alto Research Center 3333 Coyote Hill Road Palo Alto CA 94304	A Ph.D. program for women and minorities in computer science, solid state physics, electrical engineering or materials science. Candidates must be American citizens.	Full tuition for nine months and a stipend of $1100 per month.
Amelia Earhart Fellowship Zonta International Foundation 557 West Randolph Street Chicago, IL 60661-2206 (312) 930-5848 (312) 930-0951 (FAX)	Applicant must be a woman who has a bachelor's degree in a qualifying area of science or engineering. Must have completed one year of graduate school at a well recognized institution of higher learning.	$6,000 for 1 year.

Minority Graduate Fellowship Department of Computer Science University of Arizona Gould-Simpson Bldg. Tuscon, Arizona 85721	Minority students and women	$10,000 stipend and an out of state tuition waiver.
Patricia Roberts Harris Graduate Fellowship in Computer Science The Graduate School California State University, Chico Chico, CA 95929-0785 (916) 898-5391	Must be a woman or a member of a minority group or both.	Tuition, fees, and an annual stipend of $14,000.
Graduate Opportunity Fellowships Graduate Mentorship Awards Patricia Roberts Harris Fellowships Department of Computer Science University of California, Davis	Minority students and women	varies
Graduate Fellowships Graduate Research Mentoring Program Patricia Roberts Harris Fellowships Department of Computer Science University of California, Santa Barbara	Minority students and women	varies

Patricia Roberts Harris Ph.D. Fellowship Department of Computer Science Colorado State University Apply to: gradinfocs.colostate.edu	Must be a woman or a member of a minority group or both who has been admitted to the Ph.D. program in Computer Science at Colorado State University. Must be a U.S. citizen or permanent resident.	Tuition, fees, and an annual stipend of $14,000.
NSF/GEE Fellowship Professor Lloyd N. Trefethen Department of Computer Science Cornell University Ithaca, NY 14853 (607) 255-4222 (607) 255-4428 (FAX)	A doctoral candidate who is female and/or an underrepresented minority.	Tuition, fees, and an annual stipend of $15,000 for an academic year.
Endowed Fellowship Ida Green Fellowship The Clare Booth Luce Fellowship Department of EECS Massachusetts Institute of Technology Cambridge, MA 02139 ATTN: Peggy Carney		varies
Affirmative Action Assistanceships Department of Computer Science and College of Engineering Michigan State University	First year minority or female graduate student Student works about 20 hours per week as a TA. Students must be U.S. citizens or permanent residents.	$11,000 stipend for 9 months plus 6 credits of tuition per semester for two years.

Dean's Distinguished Fellowship for Minorities and Women Michigan State University	Minority or female graduate student	The first and final years of support is fellowship support without any assigned duties in the department. The middle years must include one year as a teaching assistant and one year as a research assistant.
Graduate Scholarship Professor Rainey Little or Professor Don Dearholt Department of Computer Science Mississippi State University	Woman graduate student in the department of Computer Science.	$750 for 1 year.
Graduate Fellowships Department of Computer Science University of Missouri-Rolla	Department of Defense AASERT funding to support U.S. women in computer science working on research in formal methods for responsive systems.	tuition and fees
Fellowship Program McCormick School of Engineering and Applied Sciences Northwestern University Evanston, IL 60208-3118	Sponsored by NSF	tuition, a 12-month stipend of $15,000, and an expense account of $5,000 for supplies and conference travel.

Women in Engineering Program The Pennsylvania State University 101 Hammond Building University Park, PA 16802-1400 ATTN: Professor Richard Ladner (206) 543-9347 (814) 865-7138	Supports research experiences for faculty, graduate, and undergraduate women engineers.	varies
Diversity Fund Department of Computer Engineering Santa Clara University	Member of an underrepresented group in the context of engineering. Student must be enrolled at Santa Clara University.	varies
Simons Foundation Doctoral Entrace Fellowship Simon Fraser University	Woman student planning to enter Ph.D. program at SFU	$15,000 for 1 year.
Graduate Fellowships for Women Department of Computer Science Stanford University Stanford, CA 94305	Digital Equipment Corporation sponsors one female Ph.D. computer systems candidate and Xeror PARC supports two women Ph.D. candidates.	tuition and fees

The Endowment for Minorities and Women Department of Computer Science and Engineering University of Washington Seattle, WA 98195 ATTN: Professor Richard Ladner (206) 543-9347 (206) 543-2969	underrepresented minority and women students in the department	$5,000

Graduate Fellowships for Women Department of Computer Science University of Wisconsin-Madison Madison, WI 53706	Sponsored by the U.S. Department of Education's Graduate Assistance in Areas of National Need.	tuition and fees

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