Summary
In Computer Science education, half the battle is assembling a good group of students to educate. Thus the process by which potential Computer Science graduate students and departments come together is vitally important, but unfortunately time-consuming all around. It is also sometimes heart-breaking, when a good student applies "too high" and is accepted nowhere, or applies "too low" and ends up unchallenged. One underlying problem is the lack of usefully specific information on the admissions criteria of various departments.

A few SIGSCE attendees are responsible for making admissions decisions and communicating the bases for these decisions. This panel will provide the audience with a forum to discuss best practice, to air common dilemmas, and explore the possibility of shared resources and tools to help students better estimate their chances of acceptance at various schools.

Most SIGCSE attendees find themselves advising students applying to graduate school, and a few are themselves students in this position. This panel will provide the audience with a better understanding of how admissions committees view applicants, give hints on reading between the lines of terse admissions policy statements, and share insights and concerns.

Gary Lewandowski
Students understand that graduate school is where their professors come from, but are mostly confused about the details in terms of who decides to go, what it is like there, what one does there, and what one does as a Ph.D. Given such confusion, it is not surprising that students are unsure whether they should go to graduate school and where they should apply.

As an advisor in an undergraduate-only program, the following would help me do a better job helping students predict success both in applying and in making it through graduate school.

-- Increase the flow of information to undergraduates so they have a better understanding of where (or if) they will fit. The Preparing Future Faculty model includes information and mentoring opportunities for graduate students. Extending this model into the undergraduate realm could include hosting research and informational talks from current graduate students and undergraduate students conducting grad-student-mentored senior research projects at graduate institutions.

-- Encourage graduate schools to provide a snapshot of their successful applicants. What types of schools and majors did they come from? What, if any, was their research experience before graduate school? How many felt confident they knew what area they wanted to study? Did they take the CS Subject exam? How wide was the range in GRE scores? A searchable website holding much this information would be extremely helpful.

-- Increase student exposure to research by making more REU programs available and financially competitive with industrial internships. For students who have no clue about research, this exposure is essential. Graduate schools should make clear how
they weigh research experience against other admissions factors. Does a solid research experience help offset GRE score problems? Is it better to have an experience outside of one’s home institution?

-- Improve feedback mechanisms from alumni who go to graduate schools.

Dr. Lewandowski is active in Preparing Future Faculty.

Lillian Cassel
From the admissions side, the goal of the program is to bring in students who are a good match for the department. One of the reasons that admissions criteria may seem vague at times is that this match is not easy to define in objective terms.

The first question is about ability. Will this student do well in this department? Will he or she contribute to the intellectual climate in classes?

Beyond ability, what does the student bring to this department? This is especially important if the student is applying for any sort of assistantship. Has the student staffed a help desk or otherwise gained experience in helping other students? Has the student done some independent research or a significant project in an area of interest to the faculty? Has the student shown leadership, initiated activities of value to the undergraduate department, worked on research that led to a paper, conference presentation, or poster?

The answers to these questions come from a number of sources. Standardized test scores (GRE) are useful in evening the playing field as we evaluate records from widely diverse undergraduate schools. The GRE is a clue, but not enough. Undergraduate grades show how the student actually performs in a class. Even so, the bare grade is not a very complete picture of the student's performance. Letters of reference are crucial in getting a complete picture. The letters should be written by someone who can provide information relevant to the questions listed above. A teacher who has seen this student in several classes makes a good reference. The letter should be as specific as possible about the strengths and weaknesses of this student. Obviously canned letters are of no help and should not be used. A student who has been working should get a reference letter from a manager or supervisor who can attest to the work quality observed.

No single factor is enough to see how this student will fit with this department. It is the combined effect of all the parts of the application that lead to the decision to accept or reject an applicant.

Dr. Cassel is Chair of the ABET Computing Accreditation Committee.

Nigel Ward
At the University of Texas at El Paso we decided to create a metric of applicant strength which includes not only the GREs but also subjective factors. Doing so involved many interesting problems.

First was the question of how to combine the qualitative factors. For this we adopted an "ordered weighted average" operator between the average and the minimum.

Second was the question of how to quantify the impact of letters of recommendation. While this is arguably impossible in principle, admissions committees do somehow manage to weigh GREs versus letters. A model that does not do the same will fail to give any guidance on whether an applicant's letters will overcome a weak GPA and GREs, or conversely. We decided that three factors were needed: the warmth itself, the believability of the recommender, and the recommender's basis for judgment, with the latter two multiplied to give the weight of the letter compared to the other factors.

On a test set of 55 applicant packets, this model correctly predicted 50 accept/reject decisions. One of the incorrect predictions was a borderline case which could have gone either way. Another was due to special circumstances. In the remaining three cases, all due to the same parameter, the model predicted rejection but the committee had accepted. Since these three students had later all dropped out, however, the parameter was left unchanged. In this sense the model improved on the collective seasoned wisdom of the committee.

While the model turned out too complex for casual users to work through, fortunately it lent itself to implementation in the form of a calculator on the web (http://www.cs.utep.edu/admissions/) that enables potential applicants to predict our admissions decisions. It also approximately predicts decisions for 73 other departments, based on publicly available information. Although clearly not a final solution, this system does illustrate how admissions decisions can be modeled.

David Payne
The GRE Program is dedicated to assisting graduate programs in making good graduate admissions decisions. A recent independent meta-analysis of the predictive validity of the GRE General Test and Subject Tests (Kuncel et al., 2001) showed that both tests are generalizable valid predictors of graduate student success. Nonetheless, it is important note that the validity of Admissions decisions increase when multiple measures (e.g., GPA, Letters of Recommendation, GRE scores) are included in admissions decisions and the GRE Board and Program are committed to partnering with the graduate community to ensure that the appropriate measures are available and fully employed.

The GRE Board recently adopted a statement (see WWW.GRE.org) regarding fair and appropriate use of GRE scores and this statement highlights the importance of including multiple measures. The GRE Program is currently developing a Standardized Letter of Recommendation that should improve the validity of admissions decisions. In addition, ETS seeks to work with academic programs that are interested in conducting local validity studies similar to the one described by Ward (above). Finally, we are considering new standardized tests that will be targeted for Master's programs.

Dr. Payne is Executive Director of the GRE Program.

References: