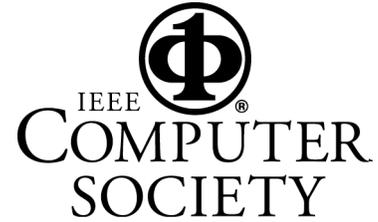


PRINCETON ACM / IEEE-CS CHAPTERS
MARCH 2011 JOINT MEETING



Predicting Faults in Large Software Systems

Elaine Weyuker

What is the best strategy for testing a large software system? If we have some historical information about the system, we might be able to guess which source files will have the largest number of faults.

The ability to predict which files in a large software system are most likely to contain the largest numbers of faults in the next release can be a very valuable asset. This talk will present work (done jointly with Thomas Ostrand and Robert Bell) which used a negative binomial regression model and information on past faults, changes and code characteristics extracted from several large industrial systems' change management repositories to predict the number of faults, for each file, in subsequent releases. Putting the files in descending order of predicted faults and selecting the highest 20% showed the predictions to be extremely accurate. These results have been used to make predictions for over 130 releases of 7 large systems collectively representing about 40 years of field experience. The predictions correctly identify the vast majority of the defects in all 7 systems.

Elaine Weyuker is an AT&T fellow doing software engineering research. Prior to moving to AT&T she was a professor of computer science at NYU's Courant Institute of Mathematical Sciences. Her research interests currently focus on software fault prediction, software testing, and software metrics and measurement. In an earlier life, Elaine did research in Theory of Computation and is the co-author of a book *Computability, Complexity, and Languages* with Martin Davis and Ron Sigal.

Elaine is the recipient of the 2010 ACM President's Award, the ACM SIGSOFT Retrospective Impact Paper Awards in 2009, the 2008 Anita Borg Institute Technical Leadership Award and 2007 ACM/SIGSOFT Outstanding Research Award. She is also a member of the US National Academy of Engineering, an IEEE Fellow, and an ACM Fellow. She has received IEEE's Harlan Mills Award for outstanding software engineering research, Rutgers University 50th Anniversary Outstanding Alumni Award, and the AT&T Chairman's Diversity Award as well as having been named a Woman of Achievement by the YWCA. She is the chair of the ACM Women's Council (ACM-W) and a member of the Executive Committee of the Coalition to Diversify Computing.

Date:	Thursday, March 17, 2011, 8:00 pm. (Refreshments and networking at 7:30 pm.)
Place:	Small Auditorium, Room CS 105 Computer Science Building, Princeton University Olden St. between William St. and Prospect Ave. +40.3502,-74.6522
Information:	Dennis Mancl (908) 582-7086, Jan Buzydlowski (610) 902-8343
On-line info:	http://www.acm.org/chapters/princetonacm

All ACM / IEEE-CS meetings are open to the public. Students and their parents are welcome. There is no admission charge, and refreshments are served.

A pre-meeting dinner with the speaker is held at 6:00 p.m. at Ruby Tuesday's Restaurant on Route 1. Please send email to princetonacm@acm.org in advance if you plan to attend the dinner.