



Embedded Functions in Combinatorial Testing – Progress in Automating Test Design

How do we build good test cases? Combinatorial testing is an effective testing approach.

This talk explores combinatorial testing (CT), from its origins in design of experiments to its present role in verifying interactions in complex systems. CT is used to test the interactions among small sets of test factors (e.g. all pairs or triples of test factor values). CT is an effective approach because it uses a relatively small number of test cases and avoids a combinatorial explosion from trying to cover everything. Typically, the set of tests are designed using automated test case generation tools. A persistent CT usability challenge has been the definition and enforcement of constraints among test factors. Test configuration and input values must conform to system requirements. If a combination of values in a test case does not conform, the test case cannot verify a result.

During the last few years, researchers have made progress by describing constraints with logic statements and then using logic solvers to generate conforming test cases. A different approach led to the introduction of an embedded functions feature in the design service at Testcover.com. The new technology allows relations among test factors to be defined as functions in a general purpose programming language. The functions enforce constraints among test factors. And embedded functions can automate test case generation to verify output equivalence classes and their boundary values.

George Sherwood is the founder and CEO of **Testcover.com**, which provides Software as a Service for combinatorial test designs. He has been actively involved in combinatorial testing since 1990. He worked at AT&T Bell Labs, where he developed CATS, a test design tool using a greedy search to accommodate system constraints. Subsequently CATS was used in several other AT&T development programs. George worked on hardware, software and service development projects, and he managed teams of engineers in a variety of disciplines. In 2003, George founded Testcover.com to enable software engineers to design test plans with more effective test cases. George has degrees in physics: his B.S. from Clemson University and Ph.D. from Yale University. He serves on the organizing committee of the International Workshop on Combinatorial Testing.

Date:	Thursday, February 15, 2018, 8:00 pm. (Refreshments and networking at 7:30 pm.)
Place:	Small Auditorium, Room CS 105 Computer Science Building, Princeton University
Information:	Dennis Mancl (908) 285-1066
On-line info:	http://PrincetonACM.acm.org

All Princeton 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 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.

