RESEARCH PROJECT Combinatorial Testing

STUDENTS TBD graduate student.

GOAL Gain experience using the combinatorial test case design technique. This technique can result in a logarithmic decrease in the number of test cases required. Provide examples of use of this technique. Evaluate effectiveness using white-box coverage. Characterize situations for which the technique is ideally suited, and unsuited. Apply technique to speech-based system.

IMPORTANCE This technique is becoming more popular. Under ideal conditions, combinatorial testing is the most economical. Because it is specification-based, this technique can stimulate the clarification and refinement of the specification.

STATUS START-UP.

TECHNICAL TASKS
(1) Review literature on combinatorial testing.
(2) Access the combinatorial testing web site for tutorials, demo tools, etc.
(3) Apply the technique to selected TestLab software at the function, class and system levels.
(4) Hypothesize ideal (best-case) situations to use, and worst-case situations.
(5) Relate technique to others like (classification-trees), decision tables.

RESOURCES
Software: Combinatorial test case generator (web site).
Hardware: Sun Unix system.

REFERENCES

DELIVERABLES
(1) Two pre-prospectus presentations: research survey; problem/solution approach.
(2) Two pre-prospectus papers: research survey; problem/solution approach.
(3) Prospectus paper and presentation.
(4) Walkthrough of each test case design.
(5) Walkthrough of test results, including coverage.
(6) Thesis.
(7) Thesis defense.
(8) Refereed paper submitted to testing conference.

TO BE SUBMITTED TO
(1) ACM Southeast Conference
(2) International Conference on Software Testing
(3) Journal of Computing in Small Colleges.
(4) Journal of Systems and Software Science.
(5) Conference on Practical Software Testing Techniques.