
Covering Arrays, Generalizations and Software Testing Applications I
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GARY BAZDELL, Carleton University

Evaluating Single Approach Constructions for Arbitrary Strength 2 Covering Arrays

A fundamental tool in any testing suite toolbox would be a construction which can work for any arbitrary set of parameters. When the parameters k and v of a strength 2 covering arrays (CA) are unknown ahead of time, the best single approach for constructing a CA is to use a combination of the product construction and projection construction on orthogonal arrays from finite fields. We will also look at higher strength constructions.

MYRA COHEN, University of Nebraska-Lincoln

GUI Interaction Testing: Using Covering Arrays to Provide Context in Software Testing

Graphical user interfaces, (GUIs), present an unbounded way for users to interact with software. During software testing it is important to cover this interaction space while accounting for the context in which events are executed. In this talk we discuss recent research leveraging covering arrays for test generation in GUIs. We present coverage criteria, empirical results, and describe some relaxations to covering arrays that would be useful for testing in this domain.

DAN HOFFMAN, University of Victoria

The Influence of Parameter Values in the Practical Application of Combinatorial Test Generation

Over the past decade, there has been tremendous progress in covering array algorithms for software test generation. To apply these algorithms in industry poses challenges for practicing testers. In particular, decisions must be made about the parameters and the values they may take on. In this talk, we present the main issues, illustrated on a simple demonstration program and a small industrial case study.

ELIZABETH MALTAIS, University of Ottawa

Covering arrays avoiding forbidden edges

Covering arrays avoiding forbidden edges (CAFEs) are combinatorial designs, useful for generating test suites so that all required interactions between pairs of components is covered in some test, while a specified list of forbidden interactions is avoided by all tests. We review important results on CAFEs, including their relations to edge clique covers, and computational complexities. We also give a new model which takes into consideration optional interactions, as well as forbidden and required interactions.

LUCIA MOURA, University of Ottawa

Covering arrays and generalizations

In this introductory talk, we survey results on covering arrays and generalizations. A covering array of strength t , k factors, each with v levels, and size n is an $n \times k$ array with entries on $\{1, 2, \dots, v\}$ such that any t -set of columns contains each of the v^t tuples in some row. Generalizations include: mixed levels, variable strength, forbidden configurations, error-locating arrays, etc. We will spend more time on topics not covered in other talks.