Abstract

Software product lines are the common trend in software development which helps in reducing the development cost. Mostly the interaction faults are very difficult to identify during the process of debugging. By the use of combinatorial testing a set of features can be identified and all small combinations can be verified to a certain level only. By introducing random testing can improve the accuracy and ratio of t-wise fault detection. Through random testing can acquire a higher level of improvements over the combinatorial testing which will be under the budgetary limit of the product. Random testing can provide minimum guarantees on the probability of fault detection at any interaction level using the set of theories. For example,
random testing becomes even more effective as the number of features increases and converges toward equal effectiveness with combinatorial testing. Given that combinatorial testing entails significant computational overhead in the presence of hundreds or thousands of features, the results suggest that there are realistic scenarios in which random testing may outperform combinatorial testing in large systems. Furthermore, in common situations where test budgets are constrained and unlike combinatorial testing, random testing can still provide minimum guarantees on the probability of fault detection at any interaction level. However, when constraints are present among features, then random testing can fare arbitrarily worse than combinatorial testing.

References

Interaction Fault Detection using Combinatorial Interaction Testing and Random Testing


Index Terms
Computer Science
Software Testing

Keywords
Combinatorial Testing  Random Testing  T-wise Fault