Software testing analytics: Examples from the evaluation of an independent software testing organization and the design of dynamic web testing

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Abstract
Testing software is an activity required by customers and dictated by economic considerations. The talk will consist of two parts related to software testing. In the first part, the talk will present an assessment of the effectiveness of an independent testing organization in terms of Escaping Defects, which are defects that were missed by the testing team and were detected by the users after the code was deployed. The talk will focus on the analysis of test data using the COM-Poisson regression model that can handle under-dispersion and over-dispersion relative to the Poisson model. Such data is common in testing and the application of Poisson or Negative Binomial models is not flexible enough to fit the data. In the second part, testing of dynamic web services is considered in the context of risk based group testing. The approach is used for selecting and prioritizing test cases for testing service-based systems in the context of semantic web services. This work analyzes the two factors of risk estimation: failure probability and importance, from three aspects: ontology data, service and composite service. With this approach, test cases are associated to semantic features, and are scheduled based on the risks of their target features. Risk assessment using Bayesian networks is used to control the process of Web Services progressive group testing, including test case ranking, test case selection and service ruling out.

References:

Professor Ron Kenett, Chairman and CEO of the KPA Group, Research Professor, University of Torino, Turin, Italy, International Professor Associate, Center for Risk Engineering, NYU-Poly, NY, USA, Past President of the Israel Statistical Association (ISA) and of the European Network for Business and Industrial Statistics (ENBIS). Ron authored and co-authored over 160 papers and 10 books on topics ranging from industrial statistics, customer surveys, multivariate quality control, risk management and statistical methods in healthcare up to performance appraisal systems and integrated management models. He held academic positions at the University of Wisconsin-Madison, the State University of New York, Binghamton, Tel Aviv University and Bell Laboratories in New Jersey. The KPA Group he formed with a partner in 1990 is a leading Israeli firm focused on generating insights through analytics with international customers such as hp, 3M, Teva, Perrigo, Roche, Intel, Amdocs, Stratasys, banks and health care providers. Ron was awarded the 2013 Greenfield Medal by the Royal Statistical Society in recognition for excellence in contributions to the applications of Statistics.