In this issue

Rachel Harrison

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The first two research papers in this issue deal with the related topics of test data and defect prediction. Testing plays a crucial role in the development of reliable systems, and these papers represent an important contribution to the field of software testing. The remaining three research papers deal with effort estimation and the assessment of quality.

In “A Multiple-Population Genetic Algorithm for Branch Coverage Test Data Generation”, Mohammad Alshraideh, Basel A Mahafzah, and Saleh Al-Sharaeh discuss a new approach for using genetic algorithms as test data generators, which utilizes a multiple-population genetic algorithm to find branches where the flow of control can be changed. This provides the ability to explore more execution paths and so improves effectiveness. The approach is compared with the use of a single-population algorithm, and the results show that the multiple-population algorithm performs well.

The testing theme continues with the paper “An Industrial Case Study of Classifier Ensembles for Locating Software Defects” by Ayse Tosun Mısırlı, Burak Turhan, and Ayse Bener. The paper presents a defect prediction model based on using multiple classifiers to help overcome the problems of noise in data. By performing a cost-benefit analysis with a number of projects, the authors found that the proposed model could deliver significant cost savings.

Effort estimation is an important part of project management. In “A Comparative Study for Estimating Software Development Effort Intervals”, Ayse Bakir, Burak Turhan, and Ayse Bener discuss cost and effort estimation using classification methods and intervals. The proposed approach is validated with seven datasets taken from public repositories. The results show that the new approach offers a number of advantages.

In “Benchmarking Library and Application Software with Data Envelopment Analysis”, Alexander Chatzigeorgiou and Emmanouil Stiakakis describe an empirical study to investigate whether the design of open-source library software is better than that of application software. The authors present a set of design principles and heuristics together with corresponding metrics. Data Envelopment Analysis is used to assess the extent to which a design meets the prescribed principles. The approach was validated using 44

R. Harrison (✉)
School of Technology, Oxford Brookes University, Wheatley, Oxford OX33 1HX, UK
e-mail: rachel.harrison@brookes.ac.uk

open-source projects, equally divided between libraries and applications. The design of the libraries was found to be superior to that of the applications. The use of Data Envelopment Analysis in this context is novel and has great potential.

The final paper in this issue is concerned with assessing maintainability. In “Assessing the Maintainability of Software Product Line Feature Models using Structural Metrics”, Ebrahim Bagheri and Dragan Gasevic present a set of structural metrics for assessing software product line models. The metrics are validated theoretically and empirically and are shown to be possible indicators of maintainability. This work is particularly interesting in view of the increasing use of software product lines.

As always, please let me know if you have any suggestions or comments on this issue.