# In this issue

**Rachel Harrison**[1]

I hope that all our readers remain well and positive as we approach the winter season.

In this issue, we have eight regular research papers and a special section.

The first three regular research papers are linked by the common theme of software defects, and this is followed by two papers on prediction and two papers on software requirements. The final paper reports the results of a survey on asset selection.

Software defects are a major concern to the industry. In "The effect of Bellwether analysis on software vulnerability severity prediction models", Patrick Kwaku Kudjo, Jinfu Chen, Solomon Mensah, Richard Amankwah and Christopher Kudjo describe an algorithm to identify and select an exemplary subset of data for use as a training set to yield improved prediction accuracy. Their experimental results show that their approach achieves an improvement over the usual benchmarks.

Continuing with the theme of defects, the paper "A public unified bug dataset for java and its assessment regarding metrics and bug prediction", by Rudolf Ferenc, Zoltán Tóth, Gergely Ladányi, István Siket and Tibor Gyimóthy, brings together public source code bug datasets and unifies their contents. They used a decision tree algorithm to show the capabilities of the dataset in bug prediction. The result is a unified dataset publicly available for use by everyone.

In "A classification and systematic review of feature model defects", Megha Bhushan, Arun Negi, Piyush Samant, Shivani Goel and Ajay Kumar present a review and their findings of key research issues related to feature model defects in product lines. This should help developers to find the types of defects and their causes.

Turning to prediction, the paper "Predicting technical debt from commit contents: reproduction and extension with automated feature selection", by Leevi Rantala and Mika Mäntyl, investigates sub-optimal development solutions that are expressed in written code comments or commits. As a result, the authors have produced a list of predictor words that correlate positively with self-admitted technical debt.

Prediction can be difficult if the dataset is imbalanced. In "An empirical study on predictability of software maintainability using imbalanced data", Ruchika Malhotra and Kusum Lata present empirical work to improve software maintainability prediction models which have been developed with machine learning techniques using imbalanced data. The

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authors recommend that the safe-level synthetic minority oversampling technique is a useful method for dealing with imbalanced datasets.

Software requirements are the basis of all development, but it remains challenging to elicit and assess requirements. The paper "What lies behind requirements? A quality assessment of statement grounds in requirements elicitation", by Corentin Burnay, Sarah Bouraga, Joseph Gillain and Ivan J. Jureta, reports on an empirical assessment of the relative qualities of requirements statements that have originated from different bases. The authors hope that their work will result in a better understanding of the statements produced by stakeholders during requirement elicitation.

In "Application of machine learning techniques to the flexible assessment and improvement of requirements quality", Valentín Moreno, Gonzalo Génova, Eugenio Parra and Anabel Fraga present a method for automatically assessing and improving the quality of requirements in various different contexts. The authors also provide a way to improve low-quality requirements.

The final regular research paper in this issue is concerned with asset selection. The paper, "Characteristics that affect preference of decision models for: an industrial questionnaire survey", by Emil Alégroth, Tony Gorschek, Kai Petersen and Michael Mattsson, investigates the choice between a decision model with high precision and one with high speed. They report the results of a survey performed with 33 practitioners which revealed that practitioners have a clear preference for speed rather than precision.

The special section in this issue is concerned with the issues of software safety and security, interoperability and risk-centric software development in safety-critical domains. I must thank the guest editors, Miguel Abrunhosa de Brito and Marion Lepmets, for bringing this section to press. They have provided a very helpful introduction to guide your reading.

I hope you enjoy reading these papers. Please contact me if you have any comments on this issue. My e-mail is rachel.harrison@brookes.ac.uk.