

Software Engineering and Software Analytics (defects and testing).

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We are currently involved with the analytics of software. We have three main themes which include:

1. Predictive Modelling in Software Engineering and Software Metrics
 1. Defect prediction
 2. Effort Estimation
 3. Using Ensemble Techniques
2. Software Testing

We are looking for a PhD student who would be interested in extending the work we have previously started relating to code fingerprinting and/or open up new areas for example the field of testing and defects or the relationship between human factors and software faults.

1) We are also looking for a PhD student to improve the techniques previously used to identify where faults are in the code, thus improving the quality of defect prediction data. Such an analysis will also allow us to identify fault types which is an on-going piece of research at the University of Hertfordshire and Brunel University.

2) Our recent work has looked at the effectiveness of unit tests. We created a metric for the effectiveness of tests when different mutation are applied to software code and the ability of the tests generated by humans to detect the harm generated by the mutated code. We are looking for a suitable student who will take this work forward. This work is on going and is likely to include collaboration with other leading universities.

David Bowes, Tracy Hall, Mark Harman, Yue Jia, Federica Sarro, and Fan Wu. 2016
Mutation-Aware Fault Prediction. *ISSTA 2016*

Jean Petrić, David Bowes, Tracy Hall, Bruce Christianson and Nathan Baddoo The Jinx on the NASA Software Defect Data Sets, *EASE 2016*

David Bowes, Tracy Hall, and Jean Petrić. 2015. Different Classifiers Find Different Defects Although With Different Level of Consistency. In *Proceedings of the 11th International Conference on Predictive Models and Data Analytics in Software Engineering* (PROMISE '15). ACM

Zaheed Mahmood, David Bowes, Peter C. R. Lane, and Tracy Hall. 2015. What is the Impact of Imbalance on Software Defect Prediction Performance?. In *Proceedings of the 11th International Conference on Predictive Models and Data Analytics in Software Engineering* (PROMISE '15). ACM