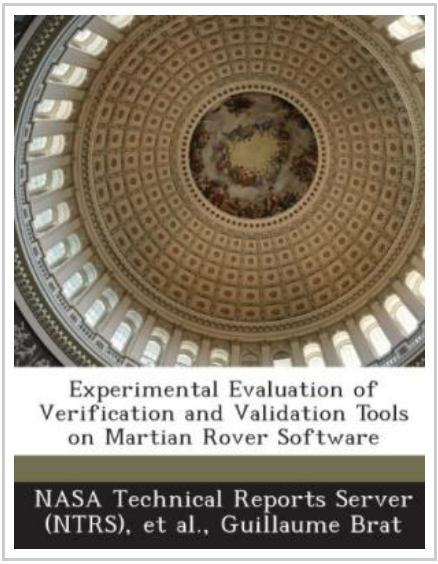

Experimental Evaluation of Verification and Validation Tools on Martian Rover Software

By Guillaume Brat

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 36 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.We report on a study to determine the maturity of different verification and validation technologies (V and V) on a representative example of NASA flight software. The study consisted of a controlled experiment where three technologies (static analysis, runtime analysis and model checking) were compared to traditional testing with respect to their ability to find seeded errors in a prototype Mars Rover. What makes this study unique is that it is the first (to the best of our knowledge) to do a controlled experiment to compare formal methods based tools to testing on a realistic industrial-size example where the emphasis was on collecting as much data on the performance of the tools and the participants as possible. The paper includes a description of the Rover code that was analyzed, the tools used as well as a detailed description of the experimental setup and the results. Due to the complexity of setting up the experiment, our results can not be generalized, but we believe it can still serve as a valuable point of reference for future studies of this kind. It did...

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