RERS 2013

Reactive systems appear everywhere: as Web services, decision support systems, or logical controllers. Their validation techniques are as diverse as their appearance and structure. They comprise various forms of static analysis, model checking, symbolic execution and (model-based) testing, often tailored to quite extreme frame conditions. Thus, it is almost impossible to compare these techniques, let alone to establish clear application profiles as a means for recommendation. The RERS Challenge series aims at a systematic investigation, evaluation, comparison, combination and improvement of any kind of methods for the analysis and validation of reactive systems, be they static, dynamic, black box or white box.
Last year's edition focused on ECA systems, a popular class of reactive systems, encountered as Web services, decision support systems, and programmable logical controllers (PLCs). Besides their industrial relevance, ECA systems where chosen because they are on the one hand fully 'white-box' (the full Java/C code was available), but on the other hand have a black-box character: being simply one huge loop of guarded commands, the ECA code structure essentially reveals nothing about the implemented functionality. This property was meant to also address competitors who base their validation on execution rather than source code analysis.

The **RERS Challenge 2013** builds on last year's experience. It involves more complex code/data structures in order to attract source code analyzers, and it explicitly addresses execution-based analyses by providing black box and grey box scenarios. In particular the latter scenarios are challenging as they profit most from the combination of source code and execution-based analyses. We therefore hope to encourage people working on areas as diverse as

- program analysis and verification,
- software/statistical model checking,
- model-based testing/test-based modeling
- run-time verification and monitoring

not only to apply their own methods, but to investigate how their methods can be improved by combining them with others.

Challenge Problems

The RERS Challenge 2013 will provide a wealth of automatically generated Benchmark problems that by construction exhibit dedicated behavioral properties of varying conceptual complexity (simple reachability, safety, liveness).
The generated system sizes range from a few hundred lines of code to millions of them, which may comprise simple arithmetic, arrays, and indirect addressing.
In order to attract as many groups as possible, some problems will be provide with full C or Java code (white box problems), while others are meant to be examined via execution (black box problems) or in some form of (static) analysis/ runtime analysis combination (grey box problem). The more involved of these problems are designed to be beyond any individual state-of-the-art method or tool in order to encourage hybrid approaches and cross community collaboration.

Challenge Rules

The challenge rules are essentially free style in order include as many participants as possible. There is a first part, where up to 100 properties must be checked for up to 80 reactive systems, and the solutions must be delivered in a standardized format for automatic processing. The second part concerns descriptions of the approaches taken.
Whereas the first part allows for a numeric ranking in terms of number of correctly answered questions, the evaluation for the second textual part is done by the RERS committee.

Important dates

Training: 21.05.-30.06.2013
Challenge: 01.07.-30.09.2013
Event: 11.11.-12.11.2013

Rewards

Winners of the categories **white box, black box, grey box, overall** and **best approach taken** will receive gift coupons sponsored by Springer. In addition we will distribute achievement certificates for solutions passing a given threshold.

Please consult the Web for additional details:
http://rers-challenge.org/