

A STEP OUT OF THE IVORY TOWER

Experiences with Adapting a Test Case Generation Idea to Business Rules

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Abstract

The full version of this paper appeared in: Proc. of 17th International Florida Artificial Intelligence Research Society Conference 2004 (FLAIRS-2004), Miami Beach, FL, USA, pp. 343-348, ISBN 1-57735-201-7, Menlo Park, CA: AAAI Press, 2004.

1. Verification and validation of business rules

Business Rules (BR) are a common knowledge representation in commercial environments. They describe and automate the business function in a declarative manner [1].

Gathering correct and complete knowledge is one of the greatest difficulties. Usually, the acquired rules are contradictory and/or insufficient. Their maintenance is a non-trivial challenge, because it often introduces unnoticed inconsistencies, contradictions and other anomalies [1]. Therefore, BR need to be verified and validated after their specification for a certain application environment. The verification issue is well developed. Based on long-term experience of developing verification techniques and tools, the authors of [2] list up requirements derived from practice and have developed the successfully applied verification tool called VALENS. For the validation of rules in Knowledge Based Systems, promising methodologies and techniques are developed [3]. The authors started embedding the test case generation step in VALENS.

2. Scenarion to Perform Validation

The rules are analyzed with the objective to compute a so called Quasi Exhaustive Set of Test cases (*QuEST*) with the following characteristics: 1) for each of the system's possible final output there is at least one test data t_j 2) *QuEST*. 2) the test data are able to reflect the boundary conditions between

different system outputs, i.e. they "frame" each boundary with so-called "scanning distance" to it. 3) the cardinality of *QuEST* is as small as possible. The procedure to compute *QuEST* is formally described in the full paper.

3. Ivory Tower Ideas vs. Practice

Rules in Commercial business rules engines (BRE) follow the association from the point of AI. Formally, they fall into the class of HORN clauses of the propositional calculus, but their expressivity is much more powerful than this, because their premises and conclusions are not limited to logical statements. Commercial business rules engines provide a Forward- and backward-Chaining rule processing with or without the control of rules' priorities. Furthermore, an implicit inference is performed by the inheritance within the class hierarchy. The developer of the validation approach assumed that an output is just a propositional statement that can be *true* or *false*. The practice taught, that a *written attribute* is considered an output. By associating a particular value, it becomes a logic statement and thus, an output in the eye of the validation approach developer. Another big issue is the assumption that a rule is a completely logic item. This sounds quite naturally, but is far away from practice. Difficulties occurred with elements like function- or method calls in the rules. "Normalizing" the rule base to one that is free of such calls could solve this.

Since there is still a long way until *BR* applications can enjoy the benefits of validation approaches, the research in both communities *BR* knowledge engineering and *V & V* of intelligent systems need to adapt their terminologies and approaches to each other's requirements.

References

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