

A Generic Approach for Modeling Test Case Priorities with Applications for Test Development and Execution

Andreas Hoffmann 1, Axel Rennoch 1,
Ina Schieferdecker 1, Nicole Radziwill 2

1 Fraunhofer FOKUS, Berlin (Germany)
{andreas.hoffmann,axel.rennoch,ina.schieferdecker}@fokus.fraunhofer.de

2 National Radio Astronomy Observatory (NRAO), Charlottesville, Virginia (USA),
nradziwi@nrao.edu

This contribution addresses systematic test development methods to include an algorithm to retrieve a test suite execution control in order to run test cases with high priority earlier than others. The approach uses a model that allows both the introduction of user-defined weightings for system features within the test model and an automatic calculation of the test ordering.

In our paper we summarize the terminology and criteria for test priority techniques understood from white-box testing. Test development techniques from different application domains, including telecommunication and automotive, will be introduced and enhanced in order to consider the determining factors for test priorities (e.g. mathematical probabilities, empirical factors).

Our algorithms are applicable in different industrial domains. Tool support has been prepared by implementing either new standalone prototype or extending existing well-established software like the Classification Tree Editor or the PREEvision system modeling tool.

We conclude by reporting practical results from the application in industrial pilot projects, including better coverage of system requirements and improved early fault detection rates.