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基于模式分析的特征交互检测

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Abstract

This paper aims at proposing an approach that can detect feature interactions through patterns analysis. The basic idea is to extract the common conflict patterns from the known feature interactions and reuse them to detect the unknown ones. With this approach, the conditions for conflicts are described using a set of predicate formulae and the system model is specified in Java language. With the aid of an external tool, all the execution scenarios can be systematically explored. During the execution of the system model, all the feature behaviors will be collected and analyzed. Once a conflict condition is satisfied, a conflict report is produced. The approach has been applied to an E-mail system. The experimental results show that the approach can effectively detect feature interactions, both the known and the unknown, after handling more than 1 million execution scenarios.

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摘要

旨在提出一种基于模式分析的特征交互检测方法,其基本思想在于从已知的交互中提取具有共性的冲突模式,并以之检测新的特征交互.该方法使用一组谓词公式描述交互发生的条件,使用Java语言对系统建模,借助于一个外部工具,系统模型可以遍历所有的运行场景.在模型运行期间,所有特征的行为将被收集和分析,一旦发现某个交互的条件得到满足,即产生冲突报告.该方法被用于一个E-mail系统的分析.实验结果显示,在处理了超过100万个运行场景后,该方法能够有效地检测出已知和未知的特征交互.

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