Report: A formal approach for run-time verification of web applications using scope-extended LTL

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1 Introduction

The paper proposes an communicating-automata-based model to formally verify of single page and multi page web applications. The authors propose an “In” operator for LTL in order to simplify LTL. This doesn’t add expressiveness, but makes LTL formulas in this specific domain more succint.

The proposed approach is dynamic and black-box, also known as run-time verification. This is so that the approach is not dependant on the source code being accessible, and assumes only the request-response flow is observable.

2 Automata-based modeling of web applications

Disclaimer: this is not an exaustive testing like traditional model checking, but should be considered as “passive testing”.

2.1 Modeling approach

2.2 Single window browsing

2.3 Multiple window browsing

3 LTL and the "In" operator

In order to represent more succintly LTL formulas in the domain of web applications, the authors extend the LTL syntax with the **In** operator.

4 Results