

Stellingen

Behorend bij het proefschrift „Nominal Techniques and Black Box Testing for Automata Learning” van Joshua Moerman

1. Bisimulations are not only useful for comparing white box systems. They can also be used in black box testing for proving completeness of test suites. By using bisimulations, we obtain simple and general proofs.
2. It is well possible to learn a big, industrial piece of software using active automata learning. A remaining bottleneck is how to find counterexamples.
3. All the ingredients for a test generation methods such as W-method can be constructed in $\mathcal{O}(n \log n)$ time for state machines of size n . From these ingredients, the test suite can be directly enumerated.
4. Nominal sets provide good semantics for register automata. From these semantics we see that the L^* algorithm seamlessly generalises to register automata.
5. When computing with nominal sets, enumeration can outperform solvers, especially in situation with few variables.
6. By restricting the expressiveness of an automaton model, we can obtain smaller automata and hence learn them more efficiently. For example, data structures can be modelled as register automata which only read fresh values.
7. A finite state machine is defined as a $5\frac{4}{5}$ -tuple (study of several papers in FSM-based testing literature).
8. Adjunctions don't lift themselves.
9. Although people often think that testing is not a formal method, testing of finite state machines can be done in a sound and complete manner.
10. Big data is a solved problem. A much more relevant and much harder problem is that of learning from small data.