Test and verification techniques in conformance checking

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Overview

1. Why testing
2. Conformance

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$\rightarrow$ Conformance is hard to express

How to check conformance

Expressing conformance $\rightarrow$ checking conformance

Test vs. verification

Test

You *may* find an error after the execution of a test.

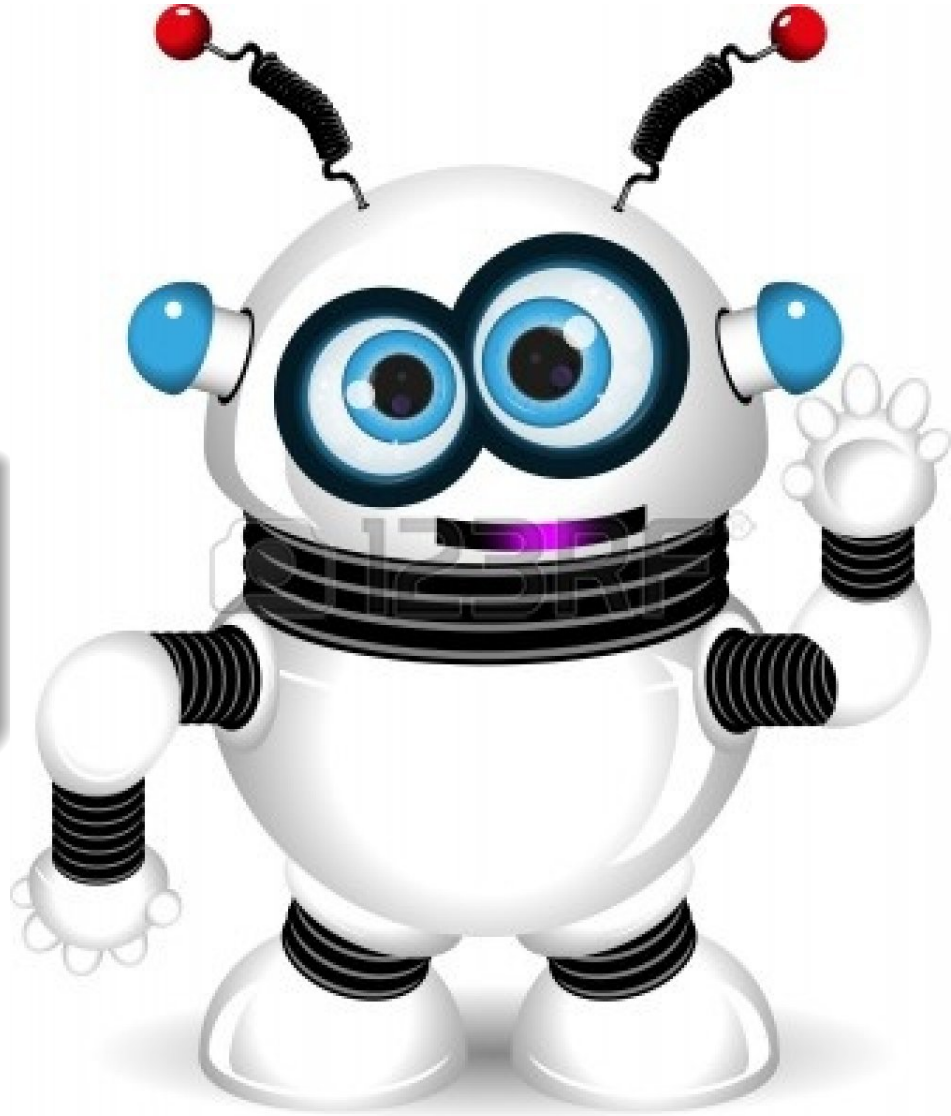
Verification

The evaluation of whether or not something complies with a specified conformance property

Testing a robot

Test "Don't kill me"

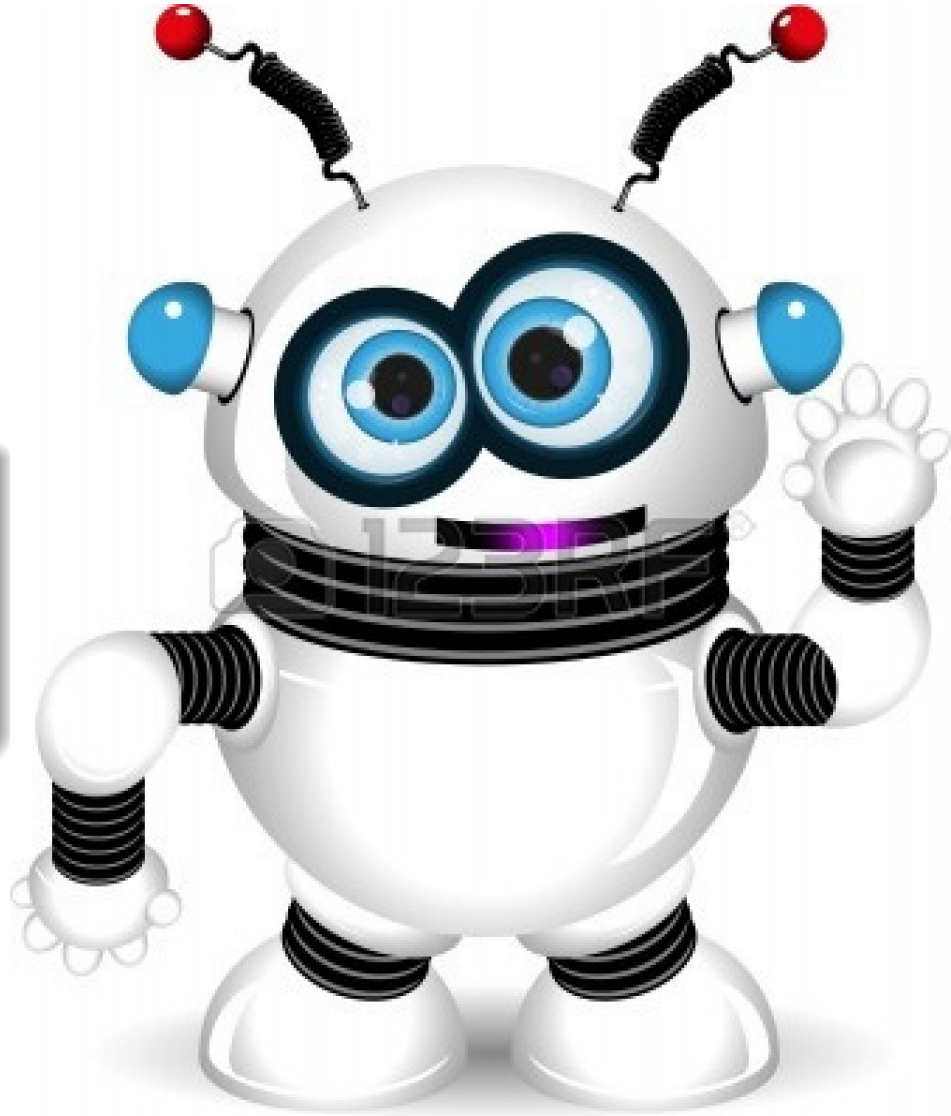
- If the robot kills you, you can be sure that the property is not fulfilled.



Verifying a robot

Test "Don't kill me"

- After verifying that a robot won't kill you, he will not kill you ;)



Monkey testing

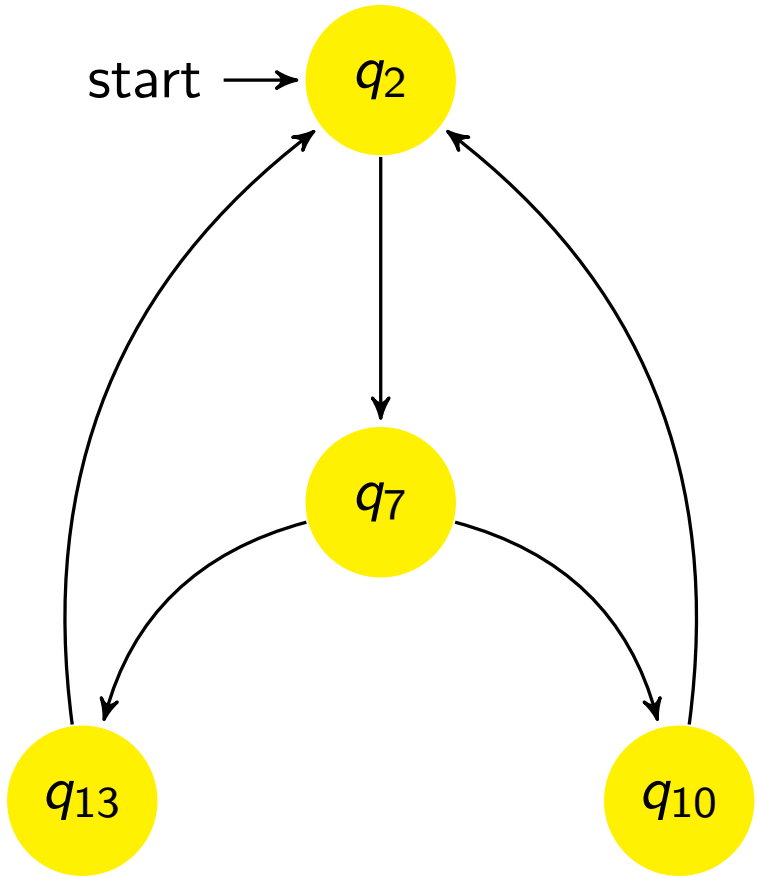
Infinite monkey theorem

The **infinite monkey theorem** states that a monkey hitting keys at random on a typewriter keyboard for an infinite amount of time will almost surely type a given text, such as the complete works of William Shakespeare.[1]

Model checking

```
1  main = do
2    putStrLn $
3          "What is the the"
4      ++ "answer to life"
5      ++ "the universe"
6      ++ "and everything?"
7    answer <- getLine
8    case answer of
9      "42" ->
10       putStrLn
11         "You're right"
12     _  ->
13       putStrLn
14         "Nope"
15   main
```

Simple transition system



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Number of atoms in the entire observable universe		10^{80}

References

 Infinite monkey effect.

The End