NAT2TEST – GENERATING TEST CASES FROM NATURAL-LANGUAGE REQUIREMENTS

DeepSpec Summer School 2018
Princeton University (US)

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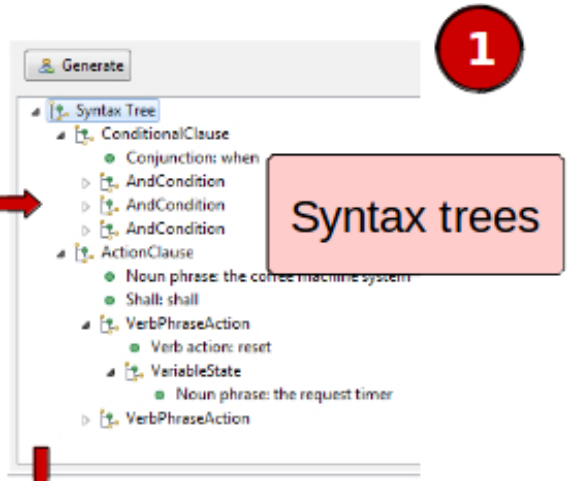
Centro de Informática (CIn) at UFPE | Brazil

- UFPE (1946)
  - 2,800 faculty members
  - 42,000 students
- Centro de Informática (1974)
  - 90 faculty members
  - 2,000 students
  - Strong research focus
    (one of the 7 best in CS in Brazil)
- Software Reliability Group (SRG)

NAT2TEST strategy (for data-flow reactive systems)

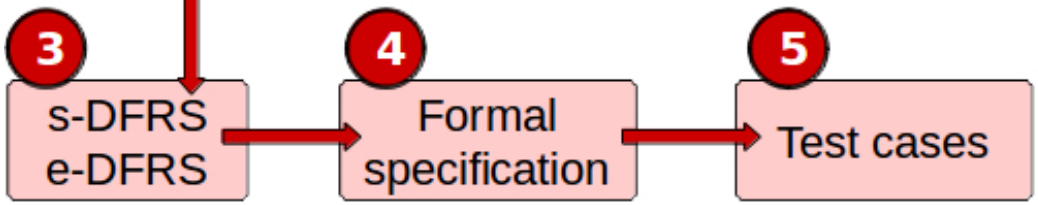
When the system mode is choice, and the coffee request button changes to pressed, and the request timer is lower than or equal to 30.0, the coffee machine system shall: reset the request timer, assign preparing weak coffee to the system mode.

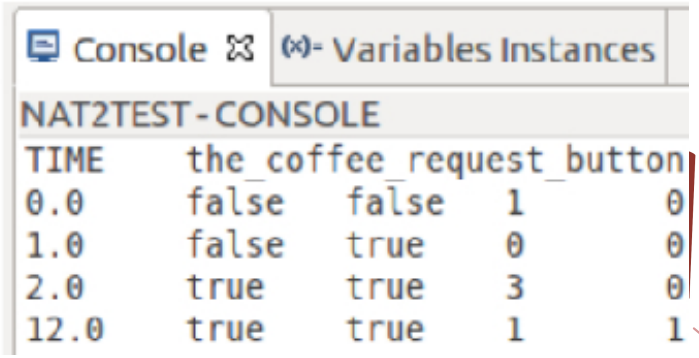


2 Requirement frames

Actions

AGT	ACT	TOV	PAT
the coffee machine system	reset	-	the request timer
	AND		
the coffee machine system	assign	preparing weak coffee	the system mode

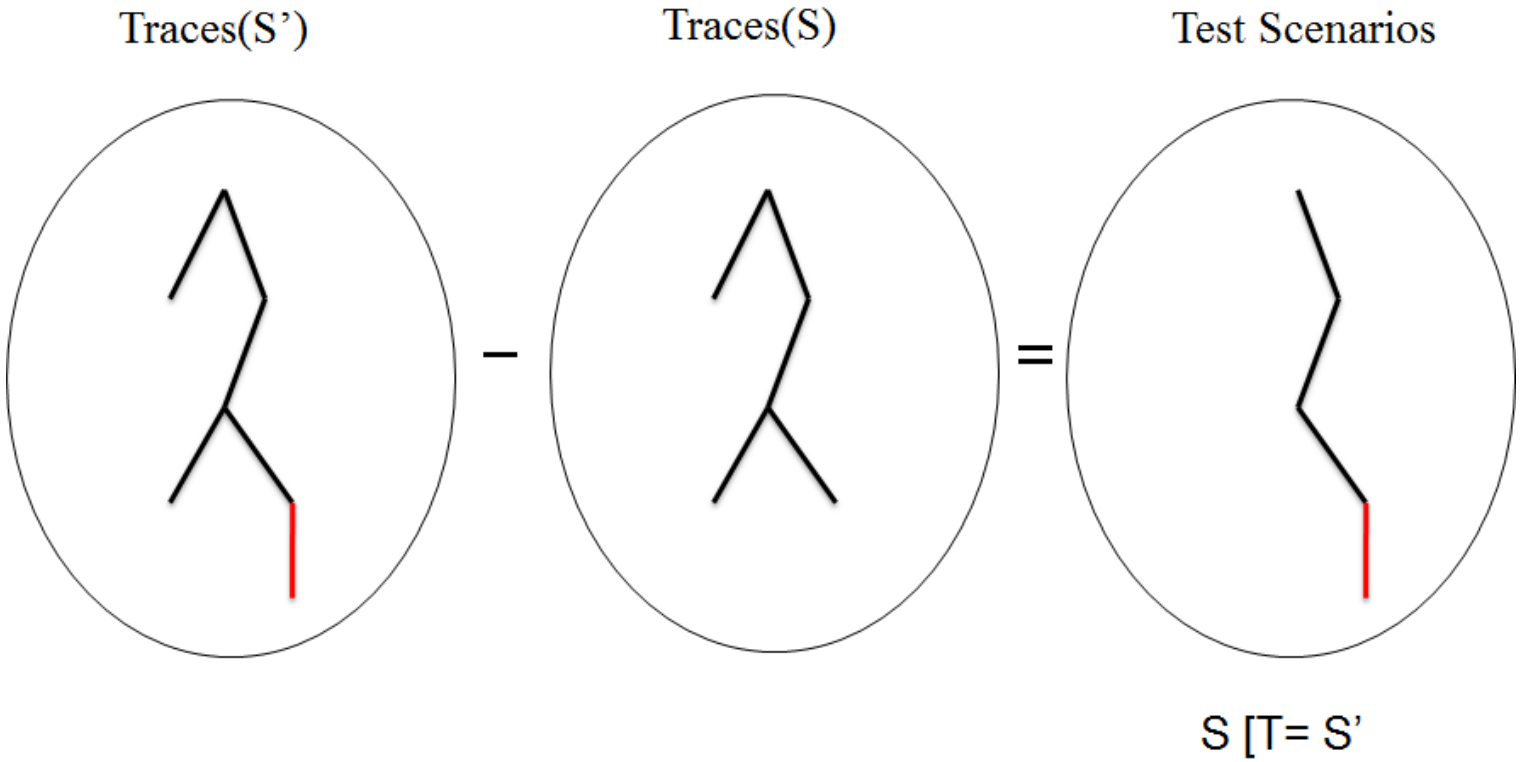




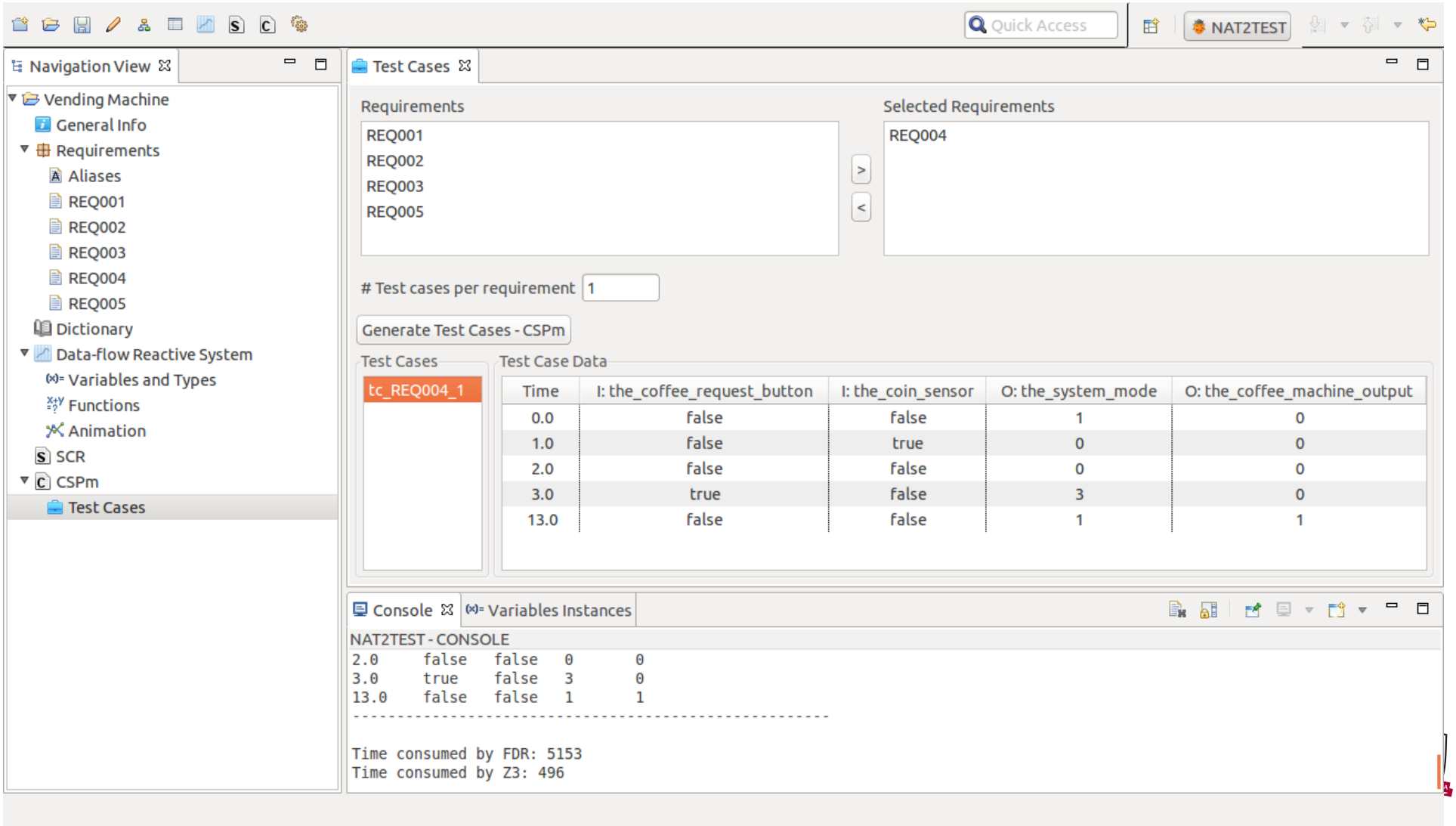
UFPE

NAT2TEST$_{CSP}$: sound test-case generation

- Test scenarios (traces) are obtained from the specification

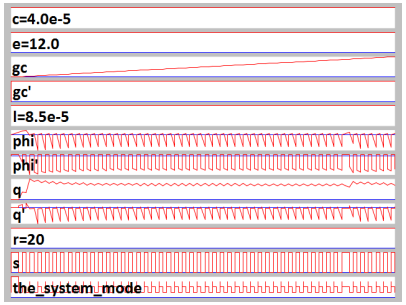


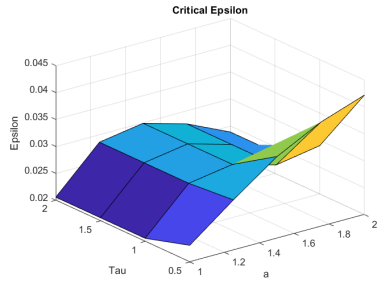
NAT2TEST tool (short demo)



Conclusion

- **NAT2TEST**: generating test cases from natural-language requirements
  - Evaluation considering examples from the aerospace (Embraer) and automotive (Mercedes) domains
- Current and future developments
  - h-NAT2TEST: considering hybrid systems
  - Compositional conformance relations
  - Compositional test case generation
  - Test case generation based on **Coq**





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