



AMT 2.0 - Trace Analysis and Diagnostic with Signal Temporal Logic and Timed Regular Expression

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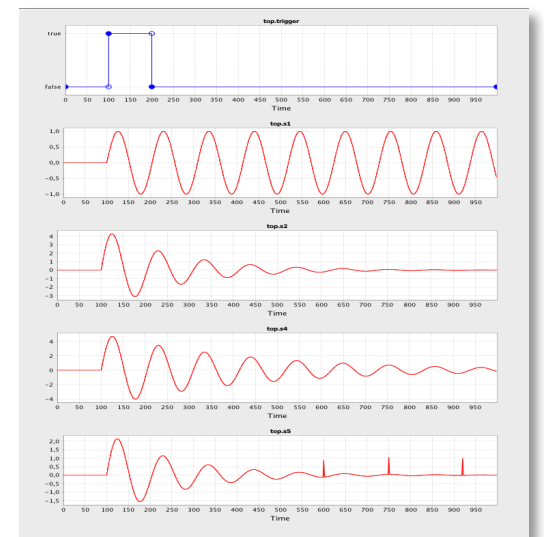
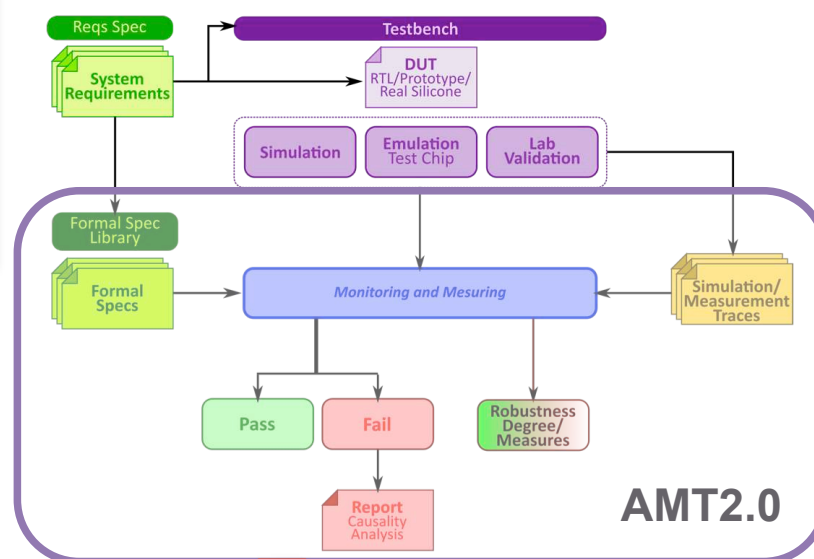
```

1 bool trigger;
2 real s1;
3 real s2;
4 real s3;
5 real s4;
6 real s5;
7 const real threshold_high = 5.0;
8 const real threshold_low = 0.2;
9
10 template bool stab (bool tg, real in, real th, real tl) {
11     bool out = (in <= th) and
12     (tg -> (eventually[0:600] always[0:145] (in <= tl)));
13     return out;
14 }
15
16 assertion one :
17     always stab(trigger, s1, threshold_high, threshold_low);
18
19 assertion two :
20     always stab(trigger, s2, threshold_high, threshold_low);
21
22 assertion three :
23     always stab(trigger, s3, threshold_high, threshold_low);
24
25 assertion four :
26     always stab(trigger, s4, threshold_high, threshold_low);
27
28 assertion five :
29     always stab(trigger, s5, threshold_high, threshold_low);
30
31

```

Formal specification

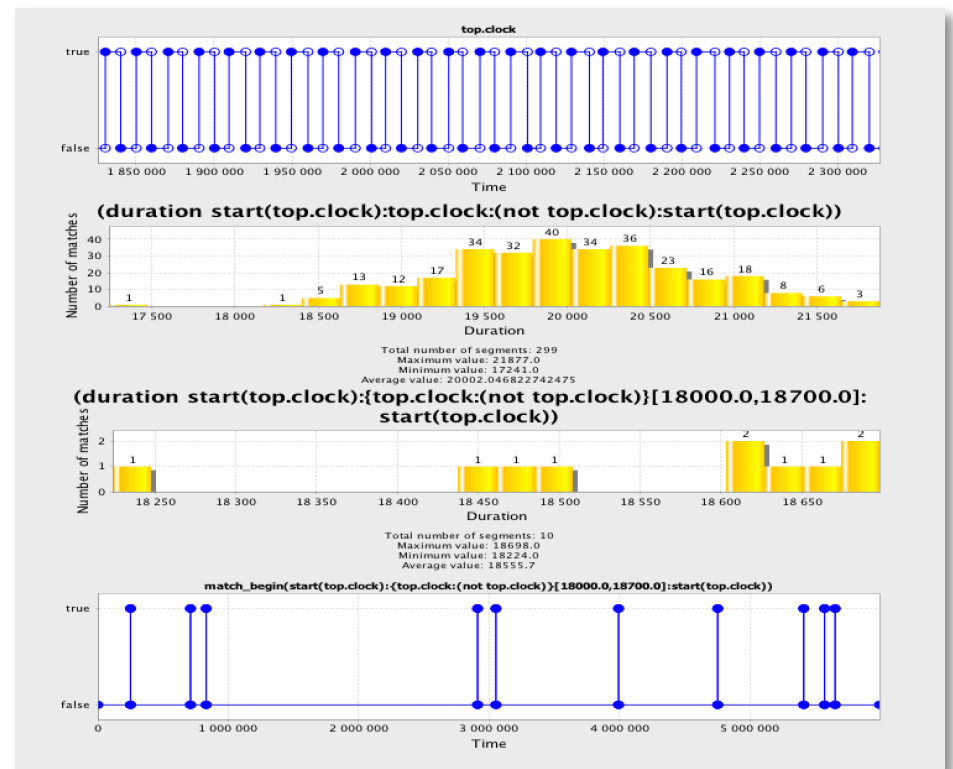
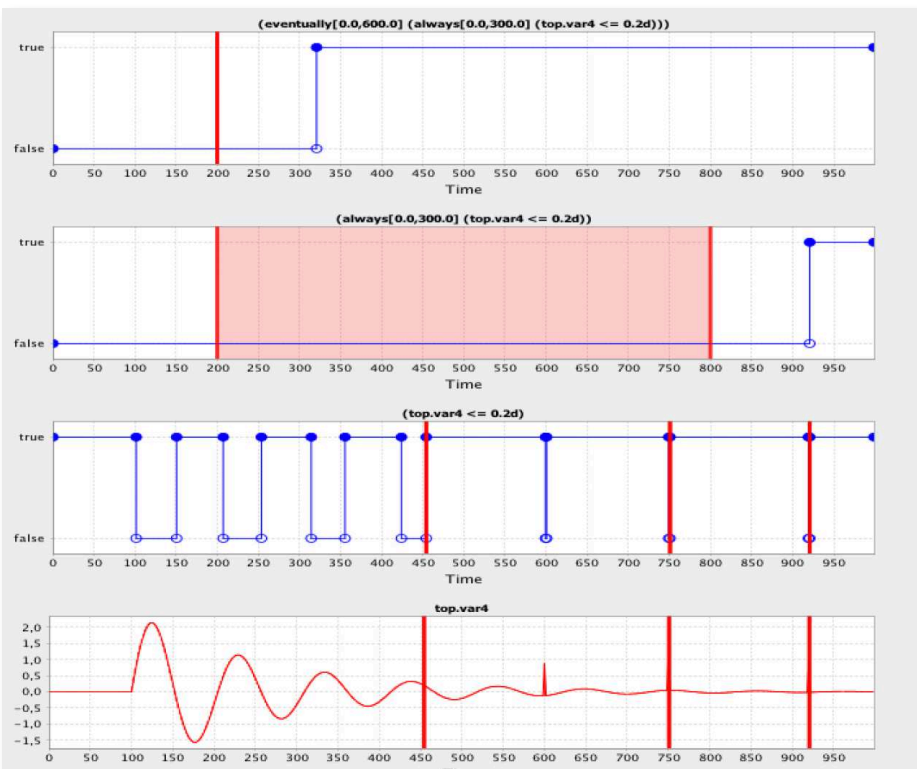
Property-based Monitoring



Traces

Analysis and diagnostic

Pattern detection and measurements



Offline monitoring algorithm with full STL semantics (including events):

Oded Maler, Dejan Nickovic: Monitoring properties of analog and mixed-signal circuits. STTT 15(3): 247-268 (2013)

Timed regular expressions matching:

Dogan Ulus, Thomas Ferrère, Eugene Asarin, Oded Maler: Timed Pattern Matching. FORMATS 2014: 222-236

Timed regular expressions measurements:

Thomas Ferrère, Oded Maler, Dejan Nickovic, Dogan Ulus: Measuring with Timed Patterns. CAV (2) 2015: 322-337

Trace diagnostics for STL :

Thomas Ferrère, Oded Maler, Dejan Nickovic: Trace Diagnostics Using Temporal Implicants. ATVA 2015: 241-258

