### First Call — Call for Tool Submission

# ODEL CHECKING CONTEST O FETER NETS 2015

June 2013

Milano, Italy

## http://mcc.lip6.fr

**Objectives.** When modeling a system with formal methods, such as Petri Nets, one may have several questions such as: *"To verify highly concurrent systems, should we use a symmetry-based or a partial order-based model checker?"* or *"For models with large variable domains, should we use decision diagram-based, or a symmetry-based model checker?"* 

Results that help to answer these questions are spread among numerous papers in numerous conferences. Moreover, as benchmarks are executed over several platforms and composed of different models, conclusions are not easy.

The objective of the Model Checking Contest is to compare the efficiency of techniques according to characteristics of models. To do so, the Model Checking Contest compares tools on several classes of models with scaling capabilities (e.g. values that set up the "size" of the associated state space).

Through the feedback on tools efficiency according to the selected benchmarks, we aim at identifying the techniques that can tackle a given type of problem identified by means of for a given class of problem (e.g. state space generation, deadlock detection, reachability analysis, causal analysis).

Types of Models. Several classes of models will be provided:

- Known models: P/T Nets (1-bounded, k-bounded), and colored Nets (1 and k-bounded per color, with and without non-equal guards on transitions, with and without cartesian product on colors, with and without successor/predecessor functions),
- "Surprise" P/T Nets hat aims at testing tools with their default settings (or "push-button" mode).

All models will be provided as PNML files. The two types of models will be provided with a detailed set of characteristics that tools can exploit when possible. For colored Nets, an equivalent P/T net will be provided in most cases.

**Important:** you may compete even if your tool does not rely on Petri nets. Then, you may enrich the archive with your formalism but the models must be Kripke equivalent to those that are provided in Petri nets.

**Examinations.** Several examinations are proposed:

- State Space Generation: tools will have to generate the state space and provide data on its size,
- Evaluation of properties: tools will have to process satisfiable and unsatisfiable properties. So far, four classes are foreseen: structural (with subclasses such as deadlock, bounds, etc.), reachability, CTL and LTL.

Each examination will be processed for all the scaling values of benchmark models. CPU and memory consumption will be measured, sampled and reported. Formulæ will be provided in a dedicated language for which a BNF in ANTLR format, as well as an XML metamodel is be provided (see the MCC web site).

Tools will have to provide results as well as an identification of the techniques activated during their execution.

**Call for Tool Submission.** After the call for model, the second call of the Model Checking Contest is the submission of Tools to be evaluated against the benchmark made of the MCC'2011 models, enriched with the models submitted during the first step of MCC'2012. To submit a tool, please respect the following procedure:

- Download the tool submission kit manual at at http://mcc.lip6.fr/pdf/MCC2013\_ SubmissionManual.pdf and read instructions; this year, the mCC is operated on top of *BenchKit<sup>a</sup>*: an environment for evaluating software execution;
- Since tools will be operated in a virtual machine, you may either reuse our proposed disk image (Linux Debian 7 with a full development environment, to be downloaded from the MCC web site<sup>b</sup>) or provide your own (see instruction for this in the submission manual);
- You can test your tool in the condition it will be operated during the contest ;
- Once the disk image is ready, have it reachable via an URL you provide to us using the instructions located in the web site.

Results will be published within the context of the Petri Nets 2013 conference in Milano next June.

If you have any question, please contact Fabrice.Kordon@lip6.fr.

<sup>a</sup>http://benchkit.cosyverif.org

<sup>b</sup>It is available at mcc.lip6.fr/archives/mcc2013.vmdk.bz2

#### General Chairs:

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### Technical Experts (PNML & VM):

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#### Important Dates: Call for Models:

November 15, 2012

**Detailed Procedure and publication of models**: February 1st, 2013

**Tool Submission**: May 1st, 2013

**Announcement of results**: June 25, 2013

