Minutes of PARDI meeting

9-10th december 2019

The purpose of this report is to keep track of the questions and discussions which occurred during the meeting.

Participants

Sylvain Conchon, Aurélie Hurault, Philippe Mauran, Stephan Merz, Pascal Poizat, Philippe Quéinnec, Adam Shimi, Fatiha Zaïdi.

Distributed Algorithms (Philippe)

Presentation of a distributed algorithm by Raynal and Taubenfeld "Fully Anonymous Shared Memory Algorithms": a small and simple algorithm that is not known to be correct or incorrect. Several experiments with the TLA model checker all lead to state explosion, and even the smallest configurations (2 or 3 processes) were hard to impossible to check.

Verification of BPMN collaborations (Pascal)

Presentation of our paper "A First-Order Logic Semantics for Communication-Parametric BPMN Collaborations" presented at the 7th International Conference on Business Process Management (BPM 2019). Recent advancements (micro-models for communication, time) and perspectives (multi-instances: name/color creation? process calculi?).

Smart Contract (Sylvain)

Presentation of preliminary results on the verification of smart contracts with Cubicle: how to express them, what can be proved? Non-trivial smart contracts are inherently parameterized and concurrent (arbitrary number of involved participants), which make them in the scope of Pardi.

TLAPS (Stephan)

New advances in TLAPS with regard to temporal properties.

Cubicle (Sylvain)

Presentation of the results of the thesis of Mattias Roux on universal unsafe properties. It presents BRWP, an extension of the backward reachability of MCMT for reasoning about validity properties expressed as universal cubes, that is formulas of the form $\exists i \forall j.C(i,j)$, where $C(i,j)$ is a conjunction of literals. This approach consists in a tight cooperation between the backward reachability loop and a deductive verification engine based on weakest-precondition calculus (WP). Next followed a discussion on the possible extensions of Cubicle (sets, maps, counters?) and on the interaction between Cubicle and TLAPS.

Next Meeting & Incoming Actions

- Next meeting in June 2020 in Nancy.
- Assessment of the deliverables
- Collaboration Cubicle - TLAPS
- BPMN multi-instance semantics