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Leiden

The Netherlands

An executable theory of multi-agent systems refinement

Aștefănoaei, L.

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Stellingen

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“An Executable Theory of Multi-Agent Systems Refinement”

door L. Aștefănoaei

1. The choice to prototype in a rewrite-based framework is motivated by the fact that rewriting logic (RL) is *executable*. More precisely, RL has the advantage that not only is prototyping a straightforward process but it further makes it possible to execute the prototypes since “computation in rewriting logic is execution”. (this thesis)
2. [...] while in autocratic societies certain correctness properties are implicitly modelled, this is no longer the case in liberal societies with infinite executions. This implies that it is necessary to consider additional fairness constraints in order to ensure the well-behaviour of the systems. (this thesis)
3. Action and state [through normative rules] coordination mechanisms are orthogonal, each with its own expressiveness and specific use. Thus, in this view, it makes little sense to imagine choreographies [action coordination artifacts] which play the role of normative rules and vice-versa. (this thesis)
4. We implement test drivers by means of rewrite strategies with the advantage of having a clear distinction between agent execution and control. This separation is important since it provides us with a clean way to enforce a different execution by simply defining a new test driver instead of changing the code of the agent itself. (this thesis)
5. Though it is a sensible rationale that the behaviour of a multi-agent system must be more than the sum of the behaviours of the individual agents composing it, for the sake of paying a small tribute to philosophy, we recall G. Frege saying “Never ask for the meaning of a word in isolation, but only in the context of a sentence.” and we replace *word* by *agent*, *context* by *coordination* and *sentence* by *multi-agent system*.
6. Negation is a troublesome concept. This is not only because, to us, it has a pessimistic flavour, or because it complicates logics. It is a troublemaker

almost by definition. As H. Bergson was inviting us to observe¹, by just naming the non-existent we bring it to life.

7. Some say (the latest reference is E.R. Kandel in his book “In search of memory”, pg. 426) that most excitement happens at the border between disciplines. Is anyone in for designing some Reo patterns for free jazz compositions?
8. The beauty of certain concepts is also in their simplicity. Being simple, makes them useful almost everywhere. Think of, for instance, labelling: we have it as radioactive atoms, bird rings, green fluorescent proteins...
9. A nightmarish picture: composition of black boxes as the software engineering view of the “Exquisite Corpse” game. This is the name of a popular Victorian game, name which is nowadays associated with the Surrealists. The rules of the game say that each participant contributes to the final result by drawing something on a piece of paper with the other parts already drawn being hidden.
10. If you ever think of giving up (and by that you know we don’t mean smoking), better not think. At most imagine you’re lost in a desert; there’s no “back” there...
11. If you think you don’t have time and a better scheduler doesn’t do the trick², maybe you should take it easy.
12. As farfetched as it might be today to make sculptures with longer hands and eyes closer to the nose just because it suits the viewer better³ this is nevertheless still common practise in disguise.

¹“If I say, ‘The object A does not exist’, I mean by that, first, that we might believe that the object A exists: how, indeed, can we think of the object A without thinking it existing, and, once again, what difference can there be between the idea of the object A existing and the idea pure and simple of the object A? Therefore, merely by saying ‘The object A’, I attribute to it some kind of existence [...]”

²This is proposed by the proposition: ‘*The solution to “I don’t have time” is “use a better scheduler”.*’ which accompanies Mahdi Jaghoori’s PhD thesis “Time at Your Service - Schedulability Analysis of Real-Time and Distributed Services” defended at Leiden University on December 20.

³Like some 13th century artists were accustomed to, see, for example, the gallery of kings from Amiens cathedral, as described in U. Eco “Art and beauty in the middle ages”.