

Ústav informatiky

Akademie věd České republiky

Pod Vodárenskou věží 2, 182 07 Praha 8

ÚI AV ČR ve spolupráci s Odbornou skupinou aplikované matematické logiky
České společnosti pro kybernetiku a informatiku

pořádá

v seminární místnosti ÚI AV ČR - místnost č. 318
(stanice metra C Ládví)

Seminář aplikované matematické logiky

který se schází **ve středu ve 14.00 hod.**

Program na srpen 2013:

28. 8. 2013 - *Tomoyuki Suzuki:*

On algebras of resource computations on nominal automata

Today, 70 years after the Church-Turing thesis, the notion of computations is drastically changing by the fantastic improvements of computer technologies and the internet services. Nowadays, we treat computers not just as a standalone machine like a calculator but much more as an environment-interactive tool, which means that each computer moves by dynamically reacting its environment such as users, other machines, its own memories or histories etc. The new concept of computations of this type is not thoroughly studied only by the Church-Turing thesis.

A crucial facet of this new computation, omitted on the Church-Turing style computation, is the handling of computational "resources." One may say that resources should be identified, allocated and deallocated. But it seems less clear what else beyond should be taken into account and how it should be modelled in a general framework. The theories of nominal sets and named sets offer the theoretical background to deal with identifiers and their properties such as freshness. As preliminary results of this research direction, we have investigated simple models of resource computations on nominal automata, extended from finite automata by the ability to allocate and deallocate "resources" and by comparing identifiers of resources up to equality.

In this seminar, I would like to present our preliminary results of nominal automata and regular expressions, published in [1] and [2] including recent developments. Also, we would like to discuss further research directions towards a general algebraic theory of resource computations on resource-handling automata.

[1] A.Kurz, T.Suzuki and E.Tuosto, On nominal regular expressions with binders. In FoSSaCS, volume 7213 of LNCS, pages 255-269, 2012.

[2] A.Kurz, T.Suzuki and E.Tuosto, A characterisation of languages on infinite alphabets with nominal regular expressions. In IFIP TCS, pages 193-208, 2012.