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Freezing Mobile Processes: an Introduction to occam-pi

Abstract

This talk reviews *occam-pi*, an efficient and safe binding of key elements from Hoare's *CSP* and Milner's *pi-calculus* into a programming language of industrial strength. It will concentrate on a model of mobile process (and channel) that extends the one presented at the Santa Cruz workshop in 2003. This model is now implemented and benchmark performance figures will be given. The benchmarks relate to applications we intend to explore for the direct modeling of large-scale natural systems, including the modelling of neighbourhood (so that free-ranging mobile processes can locate each other).

Run-time overheads are sufficiently low so that systems comprising millions of dynamically assembling and communicating processes are practical on modest processor resources. The ideas and technology will scale further to address larger systems of arbitrary complexity, distributed over multiple processors with no semantic discontinuity. Semantic design, comprehension and analysis are made possible through a natural structuring of systems into multiple levels of network and the compositionality of the underlying algebra.

URLs:

http://www.cs.ukc.ac.uk/projects/ofa/kroc/	-- official KRoC occam
http://frmb.org/kroc.html	-- latest KRoC occam
http://wotug.ukc.ac.uk/ocweb/	-- occam web server
http://www.cs.ukc.ac.uk/projects/ofa/jcsp/	-- core JCSP
http://www.quickstone.com/	-- JCSP Networking Edition (Java / J#)
http://www.wotug.org/	-- user <i>community</i>
http://www.wotug.org/cpa2004/	-- last CPA conference