



Semester- / Bachelor- / Master Thesis

Asynchronous Renaming

In the renaming problem each of n processors has a unique ID in a rather large range of names. Now some of these processes would like to acquire a new unique name in a much smaller range. This is of interest especially when only very few nodes need to acquire a new name: “one motivation for studying the renaming problem, is the fact that the complexity (in both communication and time) of a distributed algorithm depends, sometimes, on the size of the name-space of the processors [...]. Using shorter names as processor identifiers in messages results in shorter messages and hence smaller message complexity. In particular, replacing names taken from an unbounded domain by bounded-length names lets one to effectively bound the message complexity of algorithms.” [from “Renaming in an Asynchronous Environment” by Attiya, Bar-Noy, Dolev, Peleg and Reischuck in JACM 1990].

In this thesis one will consider renaming in an asynchronous system where processes might crash during execution and have a number of shared read-write registers. To perform the renaming the processes can only use their old ID and the shared registers. Not only should they use as few registers as possible, also the time needed for renaming is another critical resource.

We believe that recent insights from other fields of distributed computing like the theory of wireless computing might be helpful to improve some of the best current solutions for the above problem. A successful student will read a few papers that we suggest and with our assistance try to derive and analyze algorithms for the renaming problem in the above model. One will focus more on the theory than on implementing the algorithms.



Figure 1: Insights from wireless computing could help in the renaming problem.

Interested? Come to our office for coffee and a small chat or contact us by email / phone.

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