Presentation Abstract

The Synchronized Ambient Calculus

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This presentation proposes a process algebra "the Synchronized Ambient Calculus" (SAC) that is an extension of the ambient calculus (AC). Processes of AC have layered structure of ambients that enables us to describe not only mobile processes but also real entities such as networks, freight–systems, etc., in which synchronization between objects are crucial to achieve their purpose. For example, a container must be brought out from a container yard just after the container ship reached the container terminal. While such a protocol can be described by using primitives (in, out, open) of AC, the protocol is easily corrupted by the phenomenon called "grave interference" that led us to design SAC. There are following merits for using SAC: we can describe synchronized actions of objects without grave interference, expressions for such synchronized actions can be simpler than using AC, and the problem for an equationanl theory can be solved easier than our previous work. We also show an example of SAC processes that piles up containers on stacks in constrained shipping order, e.g. in ascending order, whose execution sequences can be used to improve the efficiency of the reinforcement learning method we have been developing.