TU Clausthal

Bachelor-, Master- und Doktorandenseminar
des Instituts für Informatik

# A Framework for Simulating Contract-Net-based Task Allocation in Object Transportation Applications

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Current technology trends in robotics are leading us to the development of multi-robot systems, that are capable of performing complex and multi-level tasks. Despite more than two decades of theoretical and experimental work on multi-robot systems, important aspects of coordination among robots have been untreated. To refer this issue, we focus on the problem of allocating tasks to a set of robots, called multi-robot task allocation, in object transportation applications. The contract-net protocol presents a generic mechanism for task-sharing in cooperative multi-robot systems by negotiations. However, due to its genericity, the solution space for configuring the contract net for a specific multi-robot task is large.

Therefore, in this thesis we propose a simulation framework that allows implementation of common operations of the interaction protocol of contract-net based task allocations. It also allows deploying the implemented task allocation mechanism in a configurable simulated multi-robot system environment, where robots and tasks can be arbitrary parameterized, so that their assigned parameters are accessible in the interaction protocol implementation. Finally, the implemented task allocation can be evaluated through a variety of reports and diagrams.

## Montag, den 26.06.2017, 16 Uhr s.t. im Besprechungsraum 109, IfI, Julius-Albert-Straße 4

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