Planning and Acting with Hierarchical Input/Output Automata

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Overview
- We are building an original framework for hierarchical planning in systems defined by the parallel composition of the models of their components where the control component is an automaton.
- Typical applications are, for example, in harbor or warehouse automation.

Example of a robot opening a door

The solution is a control automaton which drives the refined robot, door and monitoring agent towards desired goal states via I/O interactions. We propose a new algorithm for solving this problem.

The operations of parallel composition and refinement are distributive, a critical feature needed for handling this representation and the planning algorithm.

\[ \mathcal{R}(\sigma_1, s, \mu_t) = \mathcal{R}(\sigma_1 \parallel \sigma_2, s^*, \mu_t) \]

Planning Problem and Solution

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