

	Towards hierarchical probabilistic CTL model checking: Theoretical foundations
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	<p>This study proposes a hierarchical probabilistic computation tree logic, HpCTL, which is an extension of the standard probabilistic computation tree logic pCTL, as a theoretical basis for hierarchical probabilistic CTL model checking. Hierarchical probabilistic model checking is a new paradigm that can appropriately verify hierarchical randomized (or stochastic) systems. Furthermore, a probability-measure-independent translation from HpCTL into pCTL is defined, and a theorem for embedding HpCTL into pCTL is proved using this translation. Finally, the relative decidability of HpCTL with respect to pCTL is proved using this embedding theorem. These embedding and relative decidability results allow us to reuse the standard pCTL-based probabilistic model checking algorithms to verify hierarchical randomized systems that can be described using HpCTL.</p>
	