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A modal interface theory for component-based design. (English) Zbl 1242.68147

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Summary: This paper presents the modal interface theory, a unification of interface automata and modal specifications, two radically dissimilar models for interface theories. Interface automata is a game-based model which allows the designer to express assumptions on the environment and which uses an optimistic view of composition: two components can be composed if there is an environment where they can work together. Modal specifications are a language-theoretic account of a fragment of the modal mu-calculus with a rich composition algebra, which meets certain methodological requirements but which does not allow the environment and the component to be distinguished. The present paper contributes a more thorough unification of the two theories by correcting a first attempt in this direction by Larsen et al., drawing a complete picture of the modal interface algebra, and pushing the comparison between interface automata, modal automata and modal interfaces even further.

MSC:

[68Q45](#) Formal languages and automata

[03B45](#) Modal logic (including the logic of norms)

[68Q60](#) Specification and verification (program logics, model checking, etc.)

Cited in **20** Documents

Keywords:

[component-based system](#); [compositional reasoning](#); [interface theory](#); [interface automata](#); [modal specifications](#); [modal mu-calculus](#)

Software:

[Ptolemy](#)

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