Homomorphisms and Concurrent Term Rewriting

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Abstract

We study applications of relations based on rewrite systems to regular tree languages. For instance, we want to decide whether $Rel(L_1)$ is included in L_2 where L_1, L_2 are regular tree languages and Rel can be either IO, OI, parallel, or one step rewriting for a given rewrite system. Our method is somehow generic; the main -and very simple- idea is to represent $Rel(L)$ by $\Phi(\Psi^{-1}(L) \cap Ctrl)$, where Φ and Ψ are homomorphisms associated with the rewrite system and $Ctrl$ is a tree language associated with the "type "of the relation Rel. By this way, we unify several previous related results in a standard understanding. Thanks to classes of recognizable languages wider than the regular one, we get some new results. We pursue this method to tackle the problem of computing the set of descendants of a regular tree language by a rewrite system.