

Regular Separability in Büchi VASS

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Abstract

We study the (ω -)regular separability problem for Büchi VASS languages: Given two Büchi VASS with languages L_1 and L_2 , check whether there is a regular language that fully contains L_1 while remaining disjoint from L_2 . We show that the problem is decidable in general and PSPACE-complete in the 1-dimensional case, assuming succinct counter updates. The results rely on several arguments. We characterize the set of all regular languages disjoint from L_2 . Based on this, we derive a (sound and complete) notion of inseparability witnesses, non-regular subsets of L_1 . Finally, we show how to symbolically represent inseparability witnesses and how to check their existence.

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