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Deterministic input-driven queue automata: finite turns, decidability, and closure properties. (English) Zbl 1312.68122

Summary: We introduce and study the model of deterministic input-driven queue automata. On such devices, the input letters uniquely determine the operations on the memory store which is organized as a queue. In particular, we consider the case where only a finite number of turns on the queue is allowed. The resulting language families share with regular languages many desirable properties. We show that emptiness and several other problems are decidable. Furthermore, we investigate closure under Boolean operations. The existence of an infinite and tight hierarchy depending on the number of turns is also proved.

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Keywords:
input-driven automata; queue automata; finite turns; decidability questions; closure properties

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References: