

One-way and Right One-way Jumping Finite Automata

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Abstract:

One-way jumping finite automaton is a variant of jumping finite automaton.

Unlike jumping finite automaton, which can read letters nondeterministically from input tape and jump to the left or to the right, (right) one-way jumping finite automaton moves its head only from left-to-right starting from leftmost letter in the input. Once it reaches the end of input word, it returns to the beginning to continue with the computation until all the letters are read, so it works deterministically. However, both do erase the letter from input tape once it is read.

Languages accepted by right one-way jumping finite automata are spread out between the regular and context-sensitive languages while the family of languages accepted by classical jumping finite automata are incomparably smaller. Moreover, the family of languages accepted by right one-way jumping finite automata is closed under intersection with regular sets, union, concatenation and others. In comparison, jumping finite automata are closed under union and intersection, but not under concatenation and intersection with regular languages.

This presentation will focus more on describing differences between classical jumping finite automata and one-way jumping finite automata on terms of power and other properties.