

Glushkov's Construction for Functional Subsequential Transducers

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Abstract : Glushkov's construction has many interesting properties, and they become even more evident when applied to transducers. This article strives to show the vast range of possible extensions and optimisations for this algorithm. Special flavour of regular expressions is introduced, which can be efficiently converted to e-free functional subsequential weighted finite state transducers. Produced automata are very compact, as they contain only one state for each symbol (from input alphabet) of original expression and only one transition for each range of symbols, no matter how large. Such compactified ranges of transitions allow for efficient binary search lookup during automaton evaluation. All the methods and algorithms presented here were used to implement open-source compiler of regular expressions for multitape transducers.

Keywords : weighted automata, transducers, Glushkov, follow automata, regular expressions

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