
Regular transducer expressions for two-way deterministic transducers

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Résumé

Functional MSO transductions, deterministic two-way transducers, as well as streaming string transducers are all equivalent models for regular functions. We show that every regular function, either on finite words or on infinite words, captured by a deterministic two-way transducer, can be described with a regular transducer expression (RTE). RTEs are constructed from constant functions using the combinators if-then-else (deterministic choice), Hadamard product, and unambiguous versions of the Cauchy product, the 2-chained Kleene-iteration and the 2-chained omega-iteration.

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