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Weighted tree transducers. (English summary)

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Summary: “Tree transducers were generalized to tree series transducers by allowing the output to be tree series rather than trees, where a tree series is a mapping from trees to a semiring. The semantics of tree series transducers was defined in an algebraic framework, more precisely, as an initial algebra semantics. In this paper, we introduce weighted tree transducers whose semantics is defined in an operational style. A weighted tree transducer is a tree transducer each (term rewriting) rule of which is associated with a weight taken from a semiring. Along a successful derivation the weights of the involved rules are multiplied and, for every pair of input tree and output tree, the weights of its successful derivations are summed up. We show in a constructive way that tree series transducers and weighted tree transducers are semantically equivalent for both the top-down and the bottom-up cases.”

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