Towards a Propositional Logical Structure of Ambiguous Words in Weighted Automata

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A *Non-deterministic Weighted Automaton* is a non-deterministic finite automaton, where every transition takes value in a commutative semiring. In such structures, *ambiguous words* are words having more than one accepting path. Weighted automata has been succesfully used to models problems in Probabilistic Systems as well as in Natural Language Processing [3].

Monadic Second-Order Logic (MSO) with weights has been introduced in [2] to study weighted automata. This approach has been extended to fragments of MSO Łukasiewicz logic in [6].

Inspired by the works of Gerla [4, 5, 1], in this talk we deepen the connections between weighted automata and Łukasiewicz logic, by exploring the idea of interpreting the accepting paths of ambiguous words as evaluations of Łukasiewicz logic formulas, and then as elements of the Lindenbaum Algebras of Łukasiewicz logic.

References

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