

Finite-state methods in natural language processing and mathematics of language. Introduction to the special issue

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For more than half a century, finite-state methods and mathematical linguistics have benefitted from a close relation and fruitful interaction. Both research fields aim to achieve a deeper understanding of human language by means of mathematical techniques. For the automated processing of language by computers such a mathematical basis is an indispensable prerequisite. Historically, the goal pursued by mathematical linguists to formalize natural language syntax in a computer-accessible way was one of the strongest driving forces behind the development of finite-state methods. Thus, it is no exaggeration to say that the field of finite-state methods owes its existence to a large extent to mathematical linguistics. In turn, continued research on finite-state methods has resulted in a categorization of various kinds of language classes and language aspects, together with efficient and provably correct algorithms, thus expanding our understanding of the mathematical properties of language.

The two premier conferences in these fields are *Finite-State Methods in Natural Language Processing* (FSMNLP) and *Mathematics of Language* (MoL), organized biannually by their respective ACM Special Interest Groups SIGFSM and SIGMOL. The most recent installments of these conferences were FSMNLP 2017, which took place in Umeå, Sweden, on September 4–6, 2017 and MoL 2017 held on July 13–14, 2017 at Queen Mary University of London, UK. Because of the fruitful interaction between the fields, it was a natural idea to compile a joint special issue that would collect extended versions of a small number

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of selected contributions of both of these conferences. This special issue of the Journal of Language Modelling is the result, containing five articles that substantially extend, and in some cases correct, the corresponding short articles in the conference proceedings of FSMNLP 2017 and MoL 2017. In this, we follow the example of the special issue of FSMNLP 2015 and MoL 2015, which appeared as Vol 5, No 1 of the Journal of Language Modelling almost exactly two years ago.

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