Parallel Rewriting Over Word Monoids

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ABSTRACT

Presentation is discussing regulation of the grammatical parallelism, so it defines parallel derivations over free monoids generated by finitely many strings. Grammatical parallelism is represented with **E0L** grammar systems, which are special case of **ET0L** systems with one set of rules. We are defining **WMEP0L** grammars as an E0L grammars over monoids with no erasing rules(propagating), **WME0L** analogically with erasing rules and SE0L as an **WME0L(2)** and SEP0L as **WMEP0L(2)** where all monoid strings has length no more than two. Presentation demonstrates that this kind of regulation results into a large increase of generative power of classic E0L grammars. Moreover, it is enough for strings that generate free monoids to consist of no more than 2 symbols to achieve this power increase. Generative power of **WME(P)0L(1)** is power of **E(P)0L**, which is stronger than **CF**, and power of **WMEP0L(2)** or **SEPOL** is precisely power of **CS** (context sensitive) language family and generative power of **WME0L(2)** or **SE0L** is power of **RE** (recursively enumerable) language family. Presented regulation of E0L grammars is computationally complete.

Keywords: Algebraic approach to grammatical regulation in parallel, E0L grammars, Parallel derivations over free monoids generated by strings, Context conditions, Computational completeness

REFERENCES

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