On Erasing Rules in Regulated Grammars

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Assignment and Motivation

Assignment Study elimination of erasing rules (ε-rules) from regulated grammars

- ▶ Present results (possibility, techniques)
- ▶ New results
- ▶ Significance to syntactical analysis

Motivation

- ▶ Open problems (exact effect of ε-rules to the power of regulated grammars)
- ▶ Personal interest, challenging area, cooperation with prof. Meduna

Results

Present results

- ▶ Overview of known results and techniques
- ▶ Extensive bibliography

New results

- ▶ Algorithm: elimination of all ε-rules from regular-controlled context-free grammars satisfying a certain condition
- ▶ Algorithm: alternative elimination of ε-rules from context-free grammars (no predetermination of ε-nonterminals)

Syntactical analysis

- ▶ Further research is needed (economical transformations)

Publications and Appearances

📄 Alexander Meduna and Petr Zemek
On Regular-Controlled Context-Free Grammars that Erase Nonterminals in a
k-Limited Way
In: *Fundamenta Informaticae* (submitted)

📄 Alexander Meduna and Petr Zemek
A Uniform Elimination of Erasing Rules in E0S Grammars Working under
Different Derivation Modes
In: *Information Processing Letters* (submitted)

📄 Petr Zemek
k-Limited Erasing Performed by Regular-Controlled Context-Free Grammars
In: *EEICT 2010* (3rd place)

► Petr Zemek
k-Limited Erasing Performed by Regular-Controlled Context-Free Grammars
Formal Languages and Automata Seminar, FIT, 2010-03-10 (talk)

Further Research

Ph.D. Thesis: **Transformations of Formal Models**

(Prof. RNDr. Alexander Meduna, CSc.)

End of Presentation

Thank you for your attention!

$$\textbf{IP} \subset \textbf{ET0L}$$

$$\{a^n b^n c^n \mid n \geq 1\} \in (\textbf{ET0L} - \textbf{IP})$$

[Theorem 2.4.1 in J. Dassow and G. Păun, 1989]