Topic 02: Extended Versions of Grammars by Parsers

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Abstract

Our presentation brings an introduction on regular-controlled context-free grammars with appearance checking and their transformation to propagating regular-control grammars with appearance checking generating sentences with their parses.

First we define regular-controlled context-free grammars by extending context-free grammar with regular language which describes sequences of usable rules. Then we describe their notable versions: (1) propagating grammars without $\varepsilon-$rules and (2) grammars with appearance checking which marks some rules to be able to make a derivation step but not change the string if they cannot be applied on any non-terminal in the string.

The core of the presentation is then explanation of an algorithm to transform every input regular-controlled grammar with appearance checking G to its propagating counterpart G' which generates sentences in form $w\rho$ where w is sentence in G and ρ is a parse, that is a string of labels of rules used for generating w. After the presentation of the algorithm we demonstrate it on an example.

Based on: Meduna Alexander, Zemek Petr: On the Generation of Sentences with Their Parses by Propagating Regular-Controlled Grammars, In: Theoretical Computer Science, 2013