

Concurrently controlled grammars

ABSTRACT

This paper introduces a new variant of Petri net controlled grammars, namely a concurrently controlled grammar, where the control over the application of the productions of a grammar is realized by a Petri net with different parallel firing strategies. The generative capacity of these grammars is investigated with respect to transition labeling strategies, definitions of final marking sets and parallel transition firing modes. It is shown that the labeling strategies do not effect the computational power whereas the maximal firing modes increase the power of concurrently controlled grammars with erasing rules up to Turing machines.

Keyword: Parallel computing; Controlled grammars; Petri net; Concurrent grammars