

# A Parallel Approach to Syllabification

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**Abstract.** In this paper we propose a parallel manner of syllabification introducing some parallel extensions of insertion grammars. We use this grammars in an application to Romanian language syllabification.

## 1 Introduction

In formal language theory, most of the generative mechanisms investigated are based on the *rewriting* operation. Several other classes of mechanisms, whose main ingredient is the *adjoining* operation, were introduced along the time. The most important of them are *the contextual grammars* (Marcus, 1969), *the tree adjoining grammars* (TAG) (Joshi et al., 1975) and *the insertion grammars* (Galiukschov, 1981), all three of them introduced with linguistic motivations. Contextual grammars were introduced by Marcus (1969) and have their origin in the attempt to bridge the gap between the structuralism and generativism. The insertion grammars (or semi-contextual grammars) are somewhat intermediate between Chomsky context-sensitive grammars (where the non-terminal are rewritten according to specified contexts) and contextual grammars (where contexts are adjoined to specified strings associated with contexts).

In this paper we introduce some parallel extensions of insertion grammars and we use them to propose a parallel manner of word syllabification. Up to now, from our knowledge, most of the formal models of syllabification were treated in a sequential manner (Vennemann (1978), Koskeniemi (1983), Bird and Ellison (1994), Kaplan and Kay (1994), Muller (2002), Dinu (2003)).

This paper is structured as follows: in Section 2 we present *the insertion grammars* and introduce two new variants of them: *parallel insertion grammars* and *maximum parallel insertion grammars*. The syllabification of words, the definition of syllable and an application (Romanian words syllabification) of this approach of syllabification is given in Section 3.

## 2 Parallel Extensions of Insertion Grammars

For elementary notions of formal language theory, such as *alphabet*, *concatenation*, *language*, *free monoid*, *lengths of words*, etc. we refer to (Păun, 1997).