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# GRAPH-CONTROLLED COOPERATING DISTRIBUTED GRAMMAR SYSTEMS WITH SINGLETON COMPONENTS [1]

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ABSTRACT

Different modes have been considered in cooperating distributed grammar systems. Here, we consider graph-controlled grammars whose rules are applied according to one specified mode and investigate their generating power. Alternatively, these grammars may be seen as graph-controlled cooperating distributed grammar systems whose components have only singleton rule sets, hence bridging two previously investigated topics. Since the maximal number of rules allowed in each component of a grammar system can be seen as a natural measure of descriptive or syntactic complexity of grammar systems, this paper investigates in detail the simplest possible language classes formed by using the mentioned syntactic complexity measure. In the proposed grammar formalism, it is possible to characterize a number of well-known language classes within a unified framework.

*Keywords:* Grammar systems, hybrid derivation modes, regulated rewriting

## 1. Introduction

Cooperating distributed (CD) grammar systems first were introduced in [3] as a grammatical model of multi-agent systems or blackboard models for problem solving known from Artificial Intelligence (AI). From this point of view, motivations for CD grammar

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