Corrigendum

Simple Matrix Grammars and Their Leftmost Variants [3]

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Oscar H. Ibarra has pointed out to us that the following main results (Theorems 2 and 3) in our paper, “Simple Matrix Grammars and Their Leftmost Variants” [3] are not correct, as they contradict previously known results in [1, 2]:

- (a) The hierarchy of simple matrix grammars collapses at two components.
- (b) Two-component simple matrix grammars are equivalent to matrix grammars.

Indeed, the simple matrix grammars as originally defined in [1] introduce an infinite hierarchy of languages between the families of context-free and matrix languages depending on the number of their components while the family of all simple matrix languages is properly included in the family of matrix languages.

The erroneous claims (a) and (b) above result from the fact that we use a different definition of simple matrix grammars in [3]. In the original definition [1], the following restrictions on the derivation relation are put:

- (i) The nonterminals used in the n components are pair-wise disjoint.
- (ii) In the rules, the number of nonterminals in each of the n components are the same.
- (iii) The application of each rule, replaces the leftmost nonterminal in each of the n components.

It was also shown in [1] that the above restrictions are essential in the sense that violating any one of these restrictions would make the grammar more powerful than a simple matrix grammar.

We point out that all the results given in [3] hold true in terms of our definition (Definition 2 in [3]) which, as already stated, improperly refer to the defined

grammars as simple matrix grammars. The results demonstrate a crucial role of the restrictions in [1]. Indeed, they imply that the omission of restriction (ii) results in a collapse of the hierarchy of languages at two components and makes two-component simple matrix grammars as powerful as matrix grammars.

We thank Oscar H. Ibarra for bringing this matter to our attention.

References

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