

On parsing some classes of 2D languages

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Abstract

In this work we address the problem of parsing picture (2D) languages, which is an important step in 2D language research. We believe that the availability of efficient parsing techniques will enable a wide class of applications of this kind of formalisms.

Among 2D formalisms we cite Giammarresi and Restivo's *Tiling Systems* (TS) [1], that define the *REC* class as the correspondent of regular languages for 2D languages. Unfortunately, [4] showed that the parsing problem for REC languages is NP-complete. Some of the most interesting recent attempts to define analogous of CF languages for pictures are Matz's *Context Free Picture Grammars* (CFPG) [2] and *Tile Rewriting Grammars* (TRG) [3] (containing both CFPG and REC languages).

We propose a polynomial-time parsing approach for CFPG languages which follows the classical Cocke, Kasami and Younger's technique [5]. Also, we present a novel practical approach for parsing TS languages using recent verification techniques.

References

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