

COMPUTING RASTER IMAGES FROM GRID PICTURE GRAMMARS¹

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ABSTRACT

While a 2-dimensional grid picture grammar may generate pictures (defined as subsets of the unit square) with arbitrarily small details, only a finite number of them can be made visible as raster images for any given raster. We present an algorithm based on bottom-up tree automata which computes the set of all raster images of the pictures generated by a given grid picture grammar.

Keywords: Formal languages, picture grammars, syntactic picture generation, image analysis, grid grammars, raster images

1. Introduction

Picture-generating devices, such as iterated function systems, chain-code picture grammars, turtle geometry picture grammars, cellular automata, random context picture grammars and collage grammars, specify in general infinite picture sequences or languages. See, for example, [10, 3, 9, 11, 7, 6]. Although they are intended and

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