

Grammatical Picture Generation

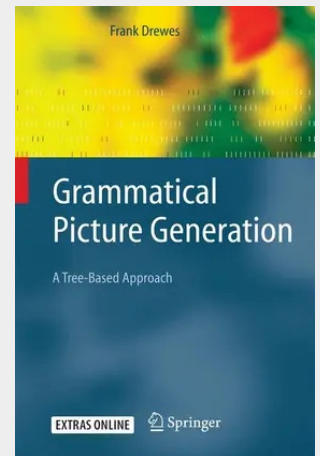
A Tree-Based Approach

This book introduces the reader to the notions, the techniques, and the theory of grammatical picture generation, a research field focusing on formal systems that describe sets of pictures by means of syntactic rules.

The book presents important types of picture generators, using a tree-based approach to stress their common algorithmic basis, the treatment influenced by the theory of computation, and the theory of formal languages in particular. It guides the reader through the basics of the tree-based approach on to dedicated chapters on line-drawing languages, collage grammars, iterated function systems, grid picture languages, languages of fractals, and languages of coloured collages, while presenting results about (un)decidable, NP-complete, or efficiently solvable problems, normal forms, hierarchies of language classes, and related phenomena.

In support, the book contains detailed exercises throughout. The book is of interest to researchers and graduate students in computer science and mathematics who are engaged with the theory and practice of picture-generating systems.

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