Straight-Line Grid Drawings of Planar Graphs

By Md. Rezaul Karim

VDM Verlag Dez 2009, 2009. Taschenbuch. Book Condition: Neu. 226x151x18 mm. This item is printed on demand - Print on Demand Neuware - A graph is an abstract structure that is used to model information. Many real-world situations can conveniently be described by means of graphs. Smaller area of a drawing increases the readability of the drawing. Compact drawing of a circuit is preferable for VLSI fabrication since a compact drawing helps us to avoid wasting of valuable wafer space. This book deals with area efficient straight-line drawings of planar graphs. We have introduced some classes of planar graphs that admit straight-line grid drawing with sub-quadratic area. We introduce ``doughnut graphs,'' a subclass of 5-connected planar graphs as well as 3-outerplanar graphs, which admits a straight-line grid drawing on a grid of area O(n). We introduce a subclass of 4-connected planar graphs that admits straight-line grid drawing with linear area. We also introduce a subclass of outerplanar graphs, which we call ``label-constrained outerplanar graphs,'' that admits straight-line grid drawings with O(nlog n) area. We give linear-time algorithms to find such drawings. We also give linear-time algorithms for recognition of these classes of graphs. 136 pp. Englisch.

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