

Algorithms for Drawings of Proper Level Graphs

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Abstract: The drawing of directed acyclic graphs (DAG) is widely recognized as a very important task in diverse fields of research and development. Level graphs are an important class of directed acyclic graphs for modeling many real applications in software and information visualization. We wish to find a drawing of proper level planar graph G in the plane such that the vertices of G are represented as grid points, and the edges are represented as straight-line segments between their endpoints without any edge-intersection. An additional objective is to minimize the area of the rectangular

grid in which G is drawn with more aesthetic embedding. In this paper we propose several ideas to find an embedding of G in a rectangular grid with minimum area, $(\lambda-1) \times (k-1)$, where λ is the number of vertices in the longest level and k is the number of levels in G .