# Guaranteed Frame Rate Drawing for Interactive Navigation of Large Graphs

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**Abstract**

Interactive navigation of large structures can be a fluid, responsive, and pleasant user experience with guaranteed frame rate drawing algorithms. Many "graph drawing" systems are more focused on batch layout of a graph than on dynamic drawing. An optimal graph drawing algorithm would depend on only the number of visible nodes and edges, rather than the total number in the entire graph. We will discuss an algorithm which approaches this goal. A high frame rate is maintained by drawing only as much of the neighborhood around a center point as is possible in the allotted drawing or picking time. We use the link structure of a spanning tree to guide additions to a pool of candidate nodes and the projected screen area of the nodes to choose from among the candidates.