Minimum Distortion Embeddings into a Line

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The problem of computing minimum distortion embeddings of a given graph into a line (path) was introduced in 2004 and has quickly attracted significant attention with subsequent results appearing in recent STOC and SODA conferences. So far, all such results concern approximation algorithms or exponential-time exact algorithms. We give the first polynomial-time algorithms for computing minimum distortion embeddings of graphs into a path when the input graphs belong to specific graph classes. In particular, we solve this problem in polynomial time for bipartite permutation graphs and threshold graphs.

Keywords: line embeddings, bipartite permutation graphs, threshold graphs.