

Constant approximation algorithms for the densest k-subgraph problem on proper interval graphs and bipartite permutation graphs

J. Mark Keil

Department of Computer Science,
University of Saskatchewan,
Saskatoon, Saskatchewan, Canada
keil@cs.usask.ca

Abstract

The densest k-subgraph problem asks for a k-vertex subgraph with the maximum number of edges. This problem is NP-hard on bipartite graphs, chordal graphs, and planar graphs. A 3-approximation algorithm is known for chordal graphs. We present $\frac{3}{2}$ -approximation algorithms for proper interval graphs and bipartite permutation graphs. The latter result relies on a new characterisation of bipartite permutation graphs that may be of independent interest.

This is joint work with Jonathan Backer