Oberseminar Theoretische Informatik
Sommersemester 2008

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Improved Algorithms for Bicluster Editing

Monday, April 21 at 2pm (c.t.) in room 3319 (Ernst-Abbe-Platz 2, floor 3).

The NP-hard Bicluster Editing is to add or remove at most k edges to make a bipartite graph $G = (V, E)$ a vertex-disjoint union of complete bipartite subgraphs. It has applications in the analysis of gene expression data. We show that by polynomial-time preprocessing, one can shrink a problem instance to one with $4k$ vertices, thus proving that the problem has a linear kernel, improving a quadratic kernel result. We further give a search tree algorithm that improves the running time bound from the trivial $O(4^k + |E|)$ to $O(3.24^k + |E|)$. Finally, we give a randomized 4-approximation, improving a known approximation with factor 11.

Homepage:
http://theinf1.informatik.uni-jena.de/teaching/ss08/oberseminar-ss08