

Oberseminar Theoretische Informatik
Sommersemester 2009

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Graph-Based Data Clustering with Overlaps

Mo. 18.05.2009 um 14:00 (c.t.) im Seminarraum 3319 (Ernst-Abbe-Platz 2,
3. Stock).

We introduce overlap cluster graph modification problems where, other than in most previous work, the clusters of the target graph may overlap. More precisely, the studied graph problems ask for a minimum number of edge modifications such that the resulting graph consists of clusters (maximal cliques) that may overlap up to a certain amount specified by the overlap number s . In the case of *s-vertex overlap*, each vertex may be part of at most s maximal cliques; *s-edge overlap* is analogously defined in terms of edges. We provide a complete complexity dichotomy (polynomial-time solvable vs NP-complete) for the underlying edge modification problems, develop forbidden subgraph characterizations of “cluster graphs with overlaps”, and study the parameterized complexity in terms of the number of allowed edge modifications, achieving fixed-parameter tractability results (in case of constant s -values) and parameterized hardness (in case of unbounded s -values).

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