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Polynomial Time Solution for Correlation Clustering on Low-Rank Positive Semidefinite Matrices.

Correlation clustering is the computationally challenging problem of partitioning a signed graph in a way that maximizes the weight of positive edges connecting nodes in the same cluster plus the weight of negative edges that link nodes in separate clusters. In this talk I will show that the problem admits a polynomial time solution on graphs whose adjacency matrix is low-rank and positive semidefinite. This yields several applications in clustering datasets that are inherently low-dimensional, and provides a method for clustering any unsigned graph by first projecting its vertices into a low-dimensional feature space. (Received December 23, 2016)