Approximate clusters and biclusters

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Abstract

In the talk, I review my results and related work on approximation of (weighted) graphs and digraphs - that is, rectangular or square similarity or flow matrices - by single clusters and biclusters.These are akin to maximum density subgraphs and spectral clusters and, as well, to some popular heuristic clustering algorithms. Theoretical and computational results will be presented. Approximate biclusters may be of interest as an extension of the formal concepts.I am going to show how approximate clusters can be used for further aggregating "clusters" of highly overlapping formal concepts to drastically reduce the numbers of "relaxed" formal concepts to study. Another development of interest is further mapping of the clusters to a taxonomic or phylogenetic hierarchy, that serves as an independent tool for verification of the clusters, with application to profiling and evolution analysis.