

Rank aggregation and its use in bioinformatics problems

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Abstract

We first illustrate the need to aggregate several ranked lists and produce a composite ranking through a number of practical examples. A solution of this problem is then offered through a decision theoretic optimization criterion and explained why it is better than more naive approaches. Computational methods to solve this mathematical problem are then presented. Integration of the rank aggregation methodology to three statistical problems are then discussed, namely, optimal selection of clustering algorithms and number of clusters, meta analysis of significance tests and construction of an adaptive data based classifier. Bioinformatics applications of the resulting methods are also discussed.