

Consensus Networks with Signed Graphs to Solve Coherence Problems

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Abstract

In many social networks, determine the relationship between users is not a simple problem to solve. Many of the techniques require positive relations among the participants because they need that the network could be modeled by a definite positive adjacency matrix. However, there are services that allow negative relationships explicitly, as a low number of stars on iTunes and Amazon or negative feedback on eBay. From the mathematical point of view, this problem can be considered with so-called coherence problems. Coherence problems consist in, given a set of elements (propositions, concepts or opinions), determine whether they are consistent with each other -coherent- or not. Determine the clustering of elements that provides the maximum consistency in the set is a complex intractable problem, for which no polynomial optimal solutions that be guaranteed. This paper shows how consensus networks may solve the problem of coherence in treatable time using a decentralized strategy, instead of typical approaches such as consider it as an optimization problem or use spectral analysis.