Group Assignment Problem

Let be a graph composed of a set of vertices, and a set of edges. Now, for each we have a ranking vector with is a partially ordered set of ’s preferences on a given issue, for example, popularity ranking, who is closest to, etc.

We are interested on finding a mapping such that each individual in the network can be assigned to one of its peers in , this is, a matching problem. You can think of this set a set of peer leaders that are assigned to individuals in the network.

The objective function of this problem is defined in terms of each vertex cost function. For , the cost function is

Where is a fixed cost. Then, the optimal mapping is defined as follows:

Moreover, can be constrained to the set of mappings in which there range is of size , i.e., exactly peer leaders.