

Abstract:

We consider a class of robust submodular maximization problems (RSMs). Given a set of possible objective functions, the associated robust model is with respect to the worst-case objective function, where each function is monotone submodular. Extending from the model, an intractable case exists that the robustness includes the proportion concept of the objective function embedded with a certain number of NP-hard submodular maximization problems. We provide facet-defining conditions on the submodular inequalities of the associated RSM polyhedral structure. We investigate several strategies for decomposition methods that solve the problem exactly. For the intractable case, we provide an analysis on obtaining the optimality gap of this problem if the NP-hard problems cannot be solved optimally.