
Unified Greedy Approximability Beyond Submodular Maximization

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Abstract

We consider classes of objectives of cardinality-constrained maximization problems for which the greedy algorithm guarantees a constant approximation. We propose the new class of γ - α -augmentable functions and prove that it includes several important subclasses, such as functions of bounded submodularity, augmentable functions, and weighted rank functions of independence systems. We show a tight bound of $\frac{1}{\alpha} \hat{e}^{\gamma(\hat{e}\alpha - 1)}$.

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