■ 연구논문 요약문1

논문제목	Robust optimization based heuristic algorithm for the chance-constrained knapsack problem using submodularity
게재정보	Optimization Letters, 온라인게재, 2019
개요	This study proposes a robust optimization-based heuristic algorithm for the chance-constrained binary knapsack problem (CKP). We assume that the weights of items are independent normally distributed. The problem can be reformulated as an integer SOCP. However, it is difficult to obtain an optimal solution in a short time using commercial softwares. Therefore we propose a heuristic algorithm using robust optimization and submodularity.
연구결과	By utilizing the properties of the submodular function, the proposed method approximates the CKP to the robust knapsack problem with a cardinality constrained uncertainty set parameterized by a uncertainty budget parameter. The proposed approach obtains a heuristic solution by solving the approximated robust knapsack problem whose optimal solution can be obtained by solving the ordinary binary knapsack problem iteratively. The computational results show the effectiveness and efficiency of the proposed approach.
활용분야 및 기대효과	- We expect that the proposed approach can be applied to other chance-constrained combinatorial oprimization problems. - Also, the main idea of this study can be used in developing a heuristic algorithm for the general case with correlated weight values.