The literature review of the papers about inverse optimization

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1 Summary

2 Some reverse location problems(2000)

This article discusses about the problem of facilities locations with the fixed locations, and the optimal solution is also not the same.

So it is called *reverse* problem. For the tree network problem, use the minimum cut or maximum flow algorithm (strongly polynomial method) as main subroutine.

2.1 Literture

Table 1: The literature showed in this paper.

Paper	Content
1994 Berman et al.	reverse tree networks problem
1997 Cai&Li	Inverse matroid intersection problem
1999 Cai&Yang	Inverse polymatroidal flow problem
1998 Hu&Liu	A strongly polynomial algorithm for the inverse arborescence problem
1997 Yang&Zhang	inverse maximum flow and minimum cut problems
1998 Yang&Zhang	inverse maximum capacity problem
1998 Zhang&Cai	Inverse problem of minimum cuts
1999 Yang&Zhang	Two general methods for inverse optimization problems
1996 Zhang&Liu	Calculating some inverse linear programming problem
1999 Zhang&Liu	Inverse fractional matching problem

3 Solving Inverse Spanning Tree Problems Through Network Flow Techniques(1999)

They first study the inverse spanning tree problems which can be transformed to an assignment problem. So just solve the unbalaned assignment problem.

3.1 Literature

Table 2: The paper showed in this paper.

Paper	Content
1992&1994 Burton&Toint	inverse shortest path problems(L2)
1995 Sokkalingam	inverse minimum cost flow problems(L_1, L_2, L_∞)
1995 Huang&Liu	inverse minimum cost flow problem

4 Inverse Combinatorial Optimization: A Survey on Problems, Methods, and Results(2004)

Overview

5 Inverse Optimization(2001)

This article shows many cases.

5.1 Literture

6 Inverse Polynomial Optimization(2013)

This article provides a systematic numerical scheme to compute an inverse optimal solution.

6.1 Literature

7 The inverse optimal value problem(2005)

The inverse optimal value problem is NP-hard in general. Under what conditions, the problem reduces to a concave maximization or a concave minimization problem. Under what sufficient conditions the associated concave minimization problem and the inverse optimal value problem is polynomially solvable. For the case

Table 3: The literature showed in this paper.

Paper	Content
1992&1994 Burton&Toint	inverse shortest path problems
1996 Zang&Liu	inverse assignment and minimum cost flow problems
1997 Yang et al.	Inverse maximum flow and minimum cut problem
1997 Yang & 1998 Zhang&Cai	inverse minimum cut problems
1995 Xu&Zhang	inverse weighted minimum cut problems and inverse shortest path problem
1999 Sokkalingam	inverse spanning tree problem
2001 Ahuja&Orlin	inverse sorting problem
1998 Ahuja&Orlin	inverse network flow problems

Table 4: The paper showed in this paper.

Paper	Content
1999 Huang&Liu	inverse linear programming problem and minimum weight perfect k-matching
1995 Zhang et al.	column generation method for inverse shortest path problem
2004 Schaefer	Inverse integer programming(feasible set)

when the set of feasible cost vectors is polyhedral, find an algorithm for the inverse optimal value problem based on solving linear and bilinear programming problems.

7.1 Literature

Table 5: The literature showed in this paper.

Paper	Content
1992&1994 Burton&Toint	inverse shortest path problems(L2)
1996&1999 Zhang&Liu	inverse linear programming for the l_1, l_∞ case
1997 Burton et al.	inverse shortest paths with upper bounds on costs
1999 Fekete et al.	similar inverse shortest path problem(complexity)

8 Inverse integer programming(2009)

Theoretical

Using superadditive duality, provide a polyhedral description of the set of inverse feasible objectives. Then describe two algorithmic approaches for solving the inverse integer programming problem.

8.1 Literature

Table 6: The paper showed in this paper.

Paper	Content
2005 Huang	Inverse knapsack problem(pseudo-polynomial time)
2005 Huang	Inverse integer programming problem with a fixed number of rows

9 Cutting plane algorithms for the inverse mixed integer linear programming problem(2009)

Theoretical

9.1 Literture

Table 7: The paper showed in this paper.

Paper	Content
1999 Yang&Zhang	Column generation and ellipsoid methods for inverse optimization
2005 Huang	Inverse mixed integer and nonlinear programming
2005 Iyengar& Kang	Inverse conic programming with applications

10 Calculating some inverse linear programming problems(1996)

A method for solving general inverse LP problem including upper and lower bound constraints is suggested which is based on the optimality conditions for LP problems. It is found that when the method is applied to *inverse minimum cost flow problem* or *inverse assignment problem*, we are able to obtain strongly polynomial algorithms.

10.1 Literature

Table 8: The paper showed in this paper.

Paper	Content
1994 Ma&Xu&Zhang	Algorithms for inverse minimum spanning tree problem
1995 Xu&Zhang	inverse weighted shortest path problem
1995 Zhang et al.	inverse shortest path problem with L_1 norm and column generation