

# SOLVING TRANSPORTATION PROBLEMS WITH MIXED CONSTRAINTS IN ROUGH ENVIRONMENT

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## Abstract

A new method namely, rough slice-sum method for solving fully rough integer interval transportation problems is proposed. The solution obtained by the proposed method provides a plan having minimum unit shipping rough cost for the given problem. The values of decision rough variables and rough objective function for the given problem obtained by the rough slice-sum method are rough integer intervals. Numerical example is presented to understand the solution procedure of the proposed method.

**AMS Subject Classification:** 90B06, 90C08.

**Key Words and Phrases:**Transportation problem, Rough integer intervals, Unit shipping cost, Rough slice-sum method.

## 1 Introduction

Transportation problem is one of the popular and most important applications of the linear programming problem. Many efficient algorithms [3, 5] have been developed for solving transportation problems having deterministic parameters. In many real life situations, some or all parameters of the transportation problem are

# Solving Transportation Problems With Mixed Constraints

**Torsten Fahle**



## **Solving Transportation Problems With Mixed Constraints:**

**Combinatorial Optimization Under Uncertainty** Ritu Arora, Shalini Arora, Anand Kulkarni, Patrick Siarry, 2023-05-12

This book discusses the basic ideas underlying principles mathematical formulations analysis and applications of the different combinatorial problems under uncertainty and attempts to provide solutions for the same. Uncertainty influences the behaviour of the market to a great extent. Global pandemics and calamities are other factors which affect and augment unpredictability in the market. The intent of this book is to develop mathematical structures for different aspects of allocation problems depicting real life scenarios. The novel methods which are incorporated in practical scenarios under uncertain circumstances include the STAR heuristic approach, Matrix geometric method, Ranking function and Pythagorean fuzzy numbers to name a few. Distinct problems which are considered in this book under uncertainty include scheduling, cyclic bottleneck assignment problem, bilevel transportation problem, multi index transportation problem, retrieval queuing, uncertain matrix games, optimal production evaluation of cotton in different soil and water conditions, the healthcare sector, intuitionistic fuzzy quadratic programming problem and multi objective optimization problem. This book may serve as a valuable reference for researchers working in the domain of optimization for solving combinatorial problems under uncertainty. The contributions of this book may further help to explore new avenues leading toward multidisciplinary research discussions.

*Integer Programming and Related Areas* R.v. Randow, 2012-12-06

**Proceedings of the Second**

**Congress on Control, Robotics, and Mechatronics** Pradeep Kumar Jha, Prashant Jamwal, Brajesh Tripathi, Deepak Garg, Harish Sharma, 2024-11-13. This book features high quality research papers presented at the International Conference of Mechanical and Robotic Engineering Congress on Control Robotics and Mechatronics CRM 2024 jointly organized by SR University Warangal India and Soft Computing Research Society India during 3-4 February 2024. This book discusses the topics such as combustion and fuels controls and dynamics, fluid mechanics, I C engines and automobile engineering, machine design, mechatronics, rotor dynamics, solid mechanics, thermodynamics and combustion engineering, composite material, aerodynamics, aerial vehicles, missiles and robots, automatic design and manufacturing, artificial intelligence, unmanned aerial vehicles, autonomous robotic vehicles, evolutionary robotics, humanoids, hardware architecture, industrial robotics, intelligent control systems, microsensors and actuators, multi robots systems, neural decoding algorithms, neural networks for mobile robots, space robotics, control theory and applications, model predictive control, variable structure control and decentralized control.

Advances in Mathematical Modelling, Applied Analysis and Computation Jagdev Singh, George A.

Anastassiou, Dumitru Baleanu, Devendra Kumar, 2025-07-11. This book is a collection of research papers from the 7th International Conference on Mathematical Modelling Applied Analysis and Computation organized by Lebanese American University Beirut Lebanon from April 18-20, 2024. This proceeding contains research papers related with fundamental mathematical theory and methods in a very suitable manner and useful for handling various contemporary issues of physical

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