

Lecture Notes in Economics and Mathematical Systems

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Klaus Neumann

Stochastic Project Networks

Temporal Analysis, Scheduling and Cost Minimization



Springer-Verlag

Stochastic Project Networks Temporal A

Kenneth H. Rosen



Stochastic Project Networks Temporal A:

Stochastic Project Networks Klaus Neumann, 1990-07-10 Project planning scheduling and control are regularly used in business and the service sector of an economy to accomplish outcomes with limited resources under critical time constraints To aid in solving these problems network based planning methods have been developed that now exist in a wide variety of forms cf Elmaghraby 1977 and Moder et al 1983 The so called classical project networks which are used in the network techniques CPM and PERT and which represent acyclic weighted directed graphs are able to describe only projects whose evolution in time is uniquely specified in advance Here every event of the project is realized exactly once during a single project execution and it is not possible to return to activities previously carried out that is no feedback is permitted Many practical projects however do not meet those conditions Consider for example a production process where some parts produced by a machine may be poorly manufactured If an inspection shows that a part does not conform to certain specifications it must be repaired or replaced by a new item This means that we have to return to a preceding stage of the production process In other words there is feedback Note that the result of the inspection is that a certain percentage of the parts tested do not conform That is there is a positive probability strictly less than 1 that any part is defective

Optimization of Temporal Networks under Uncertainty Wolfram Wiesemann, 2012-01-05 Many decision problems in Operations Research are defined on temporal networks that is workflows of time consuming tasks whose processing order is constrained by precedence relations For example temporal networks are used to model projects computer applications digital circuits and production processes Optimization problems arise in temporal networks when a decision maker wishes to determine a temporal arrangement of the tasks and or a resource assignment that optimizes some network characteristic e g the time required to complete all tasks The parameters of these optimization problems e g the task durations are typically unknown at the time the decision problem arises This monograph investigates solution techniques for optimization problems in temporal networks that explicitly account for this parameter uncertainty We study several formulations each of which requires different information about the uncertain problem parameters Perspectives on Operations Research Martin Morlock, Christoph Schwindt, Norbert Trautmann, Jürgen Zimmermann, 2007-10-31 This collection of essays is dedicated to Professor Klaus Neumann Head and Chair of the Institute for Economic Theory and Operations Research WiOR at the University of Karlsruhe On the occasion of his emeritation disciples colleagues scientific companions and friends coming from different fields have contributed their perspectives on Operations Research to form a broad view on the discipline The papers are organized in four parts on optimization OR in production and service management OR in logistics and interdisciplinary approaches We thank all the authors for their participation in publishing this volume Mrs Ute Wrasmann from Deutscher Universitäts Verlag deserves credit for her interest and assistance on this project Finally we would like to express our gratitude to PTV Planung Transport Verkehr AG in Karlsruhe and to numerous former WiOR colleagues for their

financial support Klaus Neumann was born in Liegnitz Silesia in 1937 From 1955 to 1961 he studied mathematics at the Technical Universities of Dresden and Munich His first paper on analog computers and dynamic programming was published less than two years later In 1964 he obtained a Ph D in mathematics under the supervision of Josef Heinhold in Munich After a two year stay in industry he returned to his alma mater working on the fields of dynamic optimization and control theory

Smart and Sustainable Technologies: Rural and Tribal Development Using IoT and Cloud Computing Srikanta

Patnaik,Roumen Kountchev,Vipul Jain,2022-07-27 This book presents a collection of peer reviewed best selected research papers presented at the First International Conference on Smart and Sustainable Technologies ICSST 2021 organized by Department of ECE GIET University Gunupur Rayagada Odisha India during December 16 18 2021 The proceedings of the conference have a special focus on the developments of local tribe and rural people using smart and sustainable technologies It is an interdisciplinary platform for researchers practitioners and educators as well as NGO workers who are working in the area of web engineering IoT and cloud computing Internet of Everything data science artificial intelligence machine learning computer vision and intelligent robotics particularly for the rural and tribal development

Handbook of Discrete and Combinatorial Mathematics Kenneth H. Rosen,2017-10-19 Handbook of Discrete and Combinatorial Mathematics provides a comprehensive reference volume for mathematicians computer scientists engineers as well as students and reference librarians The material is presented so that key information can be located and used quickly and easily Each chapter includes a glossary Individual topics are covered in sections and subsections within chapters each of which is organized into clearly identifiable parts definitions facts and examples Examples are provided to illustrate some of the key definitions facts and algorithms Some curious and entertaining facts and puzzles are also included Readers will also find an extensive collection of biographies This second edition is a major revision It includes extensive additions and updates Since the first edition appeared in 1999 many new discoveries have been made and new areas have grown in importance which are covered in this edition

Automated Systems in the Aviation and Aerospace Industries Shmelova, Tetiana,Sikirda, Yuliya,Rizun, Nina,Kuchеров, Dmytro,Dergachov, Konstantin,2019-03-22 Air traffic controllers need advanced information and automated systems to provide a safe environment for everyone traveling by plane One of the primary challenges in developing training for automated systems is to determine how much a trainee will need to know about the underlying technologies to use automation safely and efficiently To ensure safety and success task analysis techniques should be used as the basis of the design for training in automated systems in the aviation and aerospace industries Automated Systems in the Aviation and Aerospace Industries is a pivotal reference source that provides vital research on the application of underlying technologies used to enforce automation safety and efficiency While highlighting topics such as expert systems text mining and human machine interface this publication explores the concept of constructing navigation algorithms based on the use of video information and the methods of the estimation of the availability and accuracy parameters of satellite navigation This book is

ideal for aviation professionals researchers and managers seeking current research on information technology used to reduce the risk involved in aviation

Scheduling of Resource-Constrained Projects Robert Klein, 2012-12-06 Project management has become a widespread instrument enabling organizations to efficiently master the challenges of steadily shortening product life cycles global markets and decreasing profit margins With projects increasing in size and complexity their planning and control represents one of the most crucial management tasks This is especially true for scheduling which is concerned with establishing execution dates for the sub activities to be performed in order to complete the project The ability to manage projects where resources must be allocated between concurrent projects or even sub activities of a single project requires the use of commercial project management software packages However the results yielded by the solution procedures included are often rather unsatisfactory Scheduling of Resource Constrained Projects develops more efficient procedures which can easily be integrated into software packages by incorporated programming languages and thus should be of great interest for practitioners as well as scientists working in the field of project management The book is divided into two parts In Part I the project management process is described and the management tasks to be accomplished during project planning and control are discussed This allows for identifying the major scheduling problems arising in the planning process among which the resource constrained project scheduling problem is the most important Part II deals with efficient computer based procedures for the resource constrained project scheduling problem and its generalized version Since both problems are NP hard the development of such procedures which yield satisfactory solutions in a reasonable amount of computation time is very challenging and a number of new and very promising approaches are introduced This includes heuristic procedures based on priority rules and tabu search as well as lower bound methods and branch and bound procedures which can be applied for computing optimal solutions

Project Scheduling under Limited Resources Sönke Hartmann, 2012-12-06 Approaches to project scheduling under resource constraints are discussed in this book After an overview of different models it deals with exact and heuristic scheduling algorithms The focus is on the development of new algorithms Computational experiments demonstrate the efficiency of the new heuristics Finally it is shown how the models and methods discussed here can be applied to projects in research and development as well as market research

Advances in Project Scheduling R. Slowinski, J. Weglarz, 2013-10-22 This multi author volume containing contributions from international experts in the field presents recent developments in project scheduling for both theory and practice It is organized in three parts I Basic deterministic models II Special deterministic models III Stochastic models A variety of approaches is presented dealing with multiple category resource constraints different mathematical models of activities and various project performance measures in single and multiobjective formulation Exact and heuristic algorithms are presented for both deterministic and stochastic project description The volume will be of special interest to scientists students decision makers executive managers consultants and practitioners involved in systems management or operations research in

particular in business engineering and finance but also in other areas of pure and applied sciences

Research Günter Fandel, Hermann Gehring, 2012-12-06 Tomas Gal zum 65 Geburtstag

Operations

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