Daniel Quadt

Lot-Sizing and Scheduling for Flexible Flow Lines

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Lingsheng Yao

Lotsizing And Scheduling For Flexible Flow Lines:

   Lot-Sizing and Scheduling for Flexible Flow Lines Daniel Quadt,2004-08-18 The book considers the lot sizing and scheduling problem for flexible flow line production facilities Flexible flow lines are flow lines with parallel machines on some or all production stages They can be found in a vast number of industries A three phased solution approach is presented that solves the integrated lot sizing and scheduling problem in a hierarchical manner The approach is able to handle several important features relevant in industrial practice such as back orders and setup carry over The developed solution procedures solve practically sized problems in a relatively short amount of time One of the procedures is based on a novel mixed integer programming MIP model which employs integer variables instead of binary variables This makes it possible to find near optimal solutions using standard algorithms such as CPLEX Another procedure uses two nested Genetic Algorithms An application of the framework in the semiconductor industry is given   **Lot-Sizing and Scheduling for Flexible Flow Lines** Daniel Quadt,2012-09-14 The book considers the lot sizing and scheduling problem for flexible flow line production facilities Flexible flow lines are flow lines with parallel machines on some or all production stages They can be found in a vast number of industries A three phased solution approach is presented that solves the integrated lot sizing and scheduling problem in a hierarchical manner The approach is able to handle several important features relevant in industrial practice such as back orders and setup carry over The developed solution procedures solve practically sized problems in a relatively short amount of time One of the procedures is based on a novel mixed integer programming MIP model which employs integer variables instead of binary variables This makes it possible to find near optimal solutions using standard algorithms such as CPLEX Another procedure uses two nested Genetic Algorithms An application of the framework in the semiconductor industry is given   Lot-Sizing and Scheduling for Flexible Flow Lines Springer,2012-08-29   *Operations Research Proceedings 2005* Hans-Dietrich Haasis,Herbert Kopfer,Jörn Schönberger,2006-09-12 This volume contains a selection of 128 papers presented in lectures during the international scientific symposium Operations Research 2005 OR 2005 held at the University of Bremen September 7 9 2005 This international conference took place under the auspices of the German Operations Research Society GOR The symposium had about 600 participants from countries all over the world It attracted academics and practitioners working in various fields of Operations Research and provided them with the most recent advances in Operations Research as well as related areas in Economics Mathematics and Computer Science including the special interest streams Logistics and New Maritime Businesses The program consisted of 3 plenary and 15 semi plenary talks and about 400 contributed presentations selected by the program committee to be presented in 20 sections   Advances in Computational Intelligence in Transport, Logistics, and Supply Chain Management Andreas Fink,Franz Rothlauf,2008 The book at hand presents a careful selection of relevant applications of CI methods for transport logistics and supply chain management problems The chapters illustrate the current state of the art in the application of CI methods in

these fields and should help and inspire researchers and practitioners to apply and develop efficient methods A few contributions in this book are extended versions of papers presented at EvoTransLog2007 The First European Workshop on Evolutionary Computation in Transportation and Logistics which was held in Valencia Spain in 2007 The majority of contributions are from additional specially selected researchers who have done relevant work in different areas of transport logistics and supply chain management The goal is to broadly cover representative applications in these fields as well as different types of solution approaches On the application side the contributions focus on design of traffic and transportation networks vehicle routing and other important aspects of supply chain management such as inventory management lot sizing and lot scheduling On the method side the contributions deal with evolutionary algorithms local search approaches and scatter search combined with other CI techniques such as neural networks or fuzzy approaches The book is structured according to the application domains Thus it has three parts dealing with traffic and transportation networks vehicle routing and supply chain management **Information Control Problems in Manufacturing 2006** Alexandre Dolgui,Gerard Morel,Carlos Eduardo Pereira,2007-04-18 Information Control Problems in Manufacturing 2006 contains the Proceedings of the 12th IFAC Symposium on Information Control Problems in Manufacturing INCOM 2006 This symposium took place in Saint Etienne France on May 17 19 2006 INCOM is a tri annual event of symposia series organized by IFAC and it is promoted by the IFAC Technical Committee on Manufacturing Plant Control The purpose of the symposium INCOM 2006 was to offer a forum to present the state of the art in international research and development work with special emphasis on the applications of optimisation methods automation and IT technologies in the control of manufacturing plants and the entire supply chain within the enterprise The symposium stressed the scientific challenges and issues covering the whole product and processes life cycle from the design through the manufacturing and maintenance to the distribution and service INCOM 2006 Technical Program also included a special event on Innovative Engineering Techniques in Healthcare Delivery The application of engineering and IT methods in medicine is a rapidly growing field with many opportunities for innovation The Proceedings are composed of 3 volumes Volume 1 Information Systems Control Interoperability Volume 2 Industrial Engineering Volume 3 Operational Research 3 volume set containing 362 carefully reviewed and selected papers presenting the state of the art in international research and development in Information Control problems in Manufacturing **Proceedings of the 6th Asia Pacific Conference on Manufacturing Systems and 4th International Manufacturing Engineering Conference** Cucuk Nur Rosyidi,Pringgo Widyo Laksono,Wakhid Ahmad Jauhari,Muhammad Hisjam,2023-09-20 This book presents the proceedings of the 4th Asia Pacific Conference on Manufacturing Systems and International Manufacturing Engineering Conference APCOMS IMEC 2022 held in Surakarta Indonesia on 27 October 2022 The book presented selected papers covering scientific research in the field of manufacturing engineering with focuses on industrial engineering materials and processes The book appeals to researchers academics scientists students engineers and

practitioners who are interested in the latest developments and applications related to manufacturing engineering

Advanced Planning and Scheduling in Manufacturing and Supply Chains Yuri Mauergauz,2016-04-25 This book is a guide to modern production planning methods based on new scientific achievements and various practical planning rules of thumb Several numerical examples illustrate most of the calculation methods while the text includes a set of programs for calculating production schedules and an example of a cloud based enterprise resource planning ERP system Despite the relatively large number of books dedicated to this topic Advanced Planning and Scheduling is the first book of its kind to feature such a wide range of information in a single work a fact that inspired the author to write this book and publish an English translation This work consists of two parts with the first part addressing the design of reference and mathematical models bottleneck models and multi criteria models and presenting various sample models It describes demand forecasting methods and also includes considerations for aggregating forecasts Lastly it provides reference information on methods for data stocking and sorting The second part of the book analyzes various stock planning models and the rules of safety stock calculation while also considering the stock traffic dynamics in supply chains Various batch computation methods are described in detail while production planning is considered on several levels including supply planning for customers master planning and production scheduling This book can be used as a reference and manual for current planning methods It is aimed at production planning department managers company information system specialists as well as scientists and PhD students conducting research in production planning It will also be a valuable resource for students at universities of applied sciences   *Applying Particle Swarm Optimization* Burcu Adıgüzel Mercangöz,2021-05-13 This book explains the theoretical structure of particle swarm optimization PSO and focuses on the application of PSO to portfolio optimization problems The general goal of portfolio optimization is to find a solution that provides the highest expected return at each level of portfolio risk According to H Markowitz s portfolio selection theory as new assets are added to an investment portfolio the total risk of the portfolio s decreases depending on the correlations of asset returns while the expected return on the portfolio represents the weighted average of the expected returns for each asset The book explains PSO in detail and demonstrates how to implement Markowitz s portfolio optimization approach using PSO In addition it expands on the Markowitz model and seeks to improve the solution finding process with the aid of various algorithms In short the book provides researchers teachers engineers managers and practitioners with many tools they need to apply the PSO technique to portfolio optimization

Applications of Artificial Intelligence in Process Systems Engineering Jingzheng Ren,Weifeng Shen,Yi Man,Lichun Dong,2021-06-05 Applications of Artificial Intelligence in Process Systems Engineering offers a broad perspective on the issues related to artificial intelligence technologies and their applications in chemical and process engineering The book comprehensively introduces the methodology and applications of AI technologies in process systems engineering making it an indispensable reference for researchers and students As chemical processes and systems are usually non linear and

complex thus making it challenging to apply AI methods and technologies this book is an ideal resource on emerging areas such as cloud computing big data the industrial Internet of Things and deep learning With process systems engineering s potential to become one of the driving forces for the development of AI technologies this book covers all the right bases Explains the concept of machine learning deep learning and state of the art intelligent algorithms Discusses AI based applications in process modeling and simulation process integration and optimization process control and fault detection and diagnosis Gives direction to future development trends of AI technologies in chemical and process engineering   Time Continuity in Discrete Time Models Christopher Suerie,2006-01-17 Production planning problems containing special characteristics from process industries are addressed in this book The main subject is the development of mathematical programming models that allow to model production plans which are not disrupted by discretization of time However discrete time models are used as a basis and are subsequently enhanced to include aspects of time continuity Their integration is achieved by different building blocks which may be combined freely according to the specific planning situation at hand The primary area of application of these kinds of models are process industries   Complex Systems Approach to Economic Dynamics Abraham C.-L. Chian,2007-08-17 Statistical analysis of stock markets and foreign exchange markets has demonstrated the intermittent nature of economic time series A nonlinear model of business cycles is able to simulate intermittency arising from order chaos and chaos chaos transitions This monograph introduces new concepts of unstable periodic orbits and chaotic saddles which are unstable structures embedded in a chaotic attractor and responsible for economic intermittency   **Artificial Markets Modeling** Andrea Consiglio,2007-08-16 Agent based computational modeling with its intrinsic multidisciplinary approach is gaining increasing recognition in the social sciences particularly in economics business and finance The methodology is now widely used to compute analytical models numerically and test them for departures from theoretical assumptions and to provide stand alone simulation models for problems that are analytically intractable This volume is devoted to recent contributions to the field from both the social sciences and computer sciences It presents applications of agent based computational methodologies and tools in the social sciences focusing strongly on the uses requirements and constraints of agent based models employed by social scientists Topics include agent based macroeconomics the emergence of norms and conventions the dynamics of social and economic networks and behavioral models in financial markets   **Agent-Based Modeling** Norman Ehrentreich,2007-10-25 This book reconciles the existence of technical trading with the Efficient Market Hypothesis By analyzing a well known agent based model the Santa Fe Institute Artificial Stock Market SFI ASM it finds that when selective forces are weak financial evolution cannot guarantee that only the fittest trading rules will survive Its main contribution lies in the application of standard results from population genetics which have widely been neglected in the agent based community   *Generalized Convexity and Related Topics* Igor V. Konnov,Dinh The Luc,Alexander M. Rubinov,2006-11-22 The book contains invited papers by well known experts on a wide

range of topics economics variational analysis probability etc closely related to convexity and generalized convexity and refereed contributions of specialists from the world on current research on generalized convexity and applications in particular to optimization economics and operations research   *Economic Evolution and Equilibrium* Marco Lehmann-Waffenschmidt,2007-05-07 This work uses various model frameworks to study the evolution of equilibria in an open loop evolving economy in which the model characteristics evolve without any directional restrictions except for continuity Applying mathematical methods it is shown that equilibria can always be adapted in a piecewise gradual non bang bang way

Portfolios of Real Options Rainer Brosch,2008-03-29 Valuing portfolios of options embedded in investment decisions is arguably one of the most important and challenging problems in real options and corporate nance in general Although the problem is common and vitally important in the value creation process of almost any corporation it has not yet been satisfactorily addressed It is key for any corporation facing strategic resource allocation decisions be it a pharmaceutical rm valuing and managing its pipeline of drugs a telecom company having to select a set of technological alternatives a venture capital or private equity rm investing in a portfolio of ventures or any company allocating resources Portfolios of real options typically interact such that the value of the whole differs from the sum of the separate parts Thus one must address and value the particular con guration of options embedded in a speci c situation taking into account the con guration of other options already present in the portfolio which in turn depends on the correlation struc ture among the various underlying assets and the strategic dependencies among the options themselves e g mutual exclusivity strategic additiv ity compoundness complementarity etc In that sense optimal decisions also depend on past option exercise decisions by management and organi zational capabilities put in place in the past   *Economic Dynamics and Information* Jaroslav Zajac,2007-08-01 This book analyzes the existence of equilibria in economies having a measured space of agents and a continuum of agents and commodities Excessive homogeneity with respect to agent productivity leads to instability and non uniqueness of a given stationary state and the indeterminacy of the corresponding stationary state equilibrium Sufficient heterogeneity leads to global saddle path stability uniqueness of a given stationary state and the global uniqueness of the corresponding equilibrium

Topics in Dynamic Model Analysis Mario Faliva,Maria Grazia Zoia,2006-01-20 Classical econometrics which plunges its roots in economic theory with simultaneous equations models SEM as offshoots and time series econometrics which stems from economic data with vector autoregr sive VAR models as offsprings scour like the Janus s facing heads the flowing of economic variables so as to bring to the fore their autonomous and non autonomous dynamics It is up to the so called final form of a dy namic SEM on the one hand and to the so called representation theorems of unit root VAR models on the other to provide informative closed form expressions for the trajectories or time paths of the economic vari ables of interest Should we look at the issues just put forward from a mathematical standpoint the emblematic models of both classical and time series econometrics would turn out to be difference equation systems with ad hoc characteristics whose solutions are

attained via a final form or a represen tation theorem approach The final form solution algebraic technicalities apart arises in the wake of classical difference equation theory display ing besides a transitory autonomous component an exogenous one along with a stochastic nuisance term This follows from a properly defined ma trix function inversion admitting a Taylor expansion in the lag operator be cause of the assumptions regarding the roots of a determinant equation pe culiar to SEM specifications **Artificial Economics** Philippe Mathieu,Bruno Beaufils,Olivier Brandouy,2005-12-17 Agent based Computational Economics ACE is a new discipline of economics largely grounded on concepts like evolution auto organisation and emergence it intensively uses computer simulations as well as artificial intelligence mostly based on multi agents systems The purpose of this book is to give an up to date view of the scientific production in the fields of Agent based Computational Economics mainly in Market Finance and Game Theory Based on communications given at AE 2005 Lille USTL France this book offers a wide panorama of recent advances in ACE both theoretical and methodological that will interest academics as well as practitioners

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