

M G 1 Priority Queues

Analysis and Queueing Systems is a nine-chapter introductory text that considers the applied problem of analyzing queueing systems. This book outlines a sequence of steps, which if properly executed yield an improved design of the system. This book deals first with the development of the necessary background in probability theory and transforms methods. These topics are followed by a presentation of queueing models and how these simple models can be applied in more complex situations. The subsequent chapters survey the development of prescriptive models of queueing systems; the principles of transient analysis; and the modeling techniques for use in analyzing more complex queueing systems. The discussion then shifts to the design of data collection systems and the analysis of data. The last chapter focuses on the development of simulation models.

This book is a record of the contents of the papers accepted by the Congress Committee for presentation at the Fourth International Congress of Cybernetics and Systems (Amsterdam, The Netherlands, 21-25 August 1978). Two hundred and forty-five papers from authors from thirty-three countries of all the five continents are included. The papers are presented in an abridged form in order to highlight the main themes and produce a book that is both readable and relatively inexpensive. It was felt that after the publication of the weighty and rather costly form of the Proceedings of the

Read PDF M G 1 Priority Queues

Third International Congress of Cybernetics and Systems held in Bucharest, Romania in 1975 (Modern Trends in Cybernetics and Systems, eds. Rose and Bilciu, W. O. G. S. c. and Springer-Verlag, 1977; 3 volumes about 3500 pages; \$150), an abridged but comprehensive version would be more acceptable to readers. It is worth noting that the full names and addresses of authors are given for each paper, and requests to authors for more information and even full-scale papers would produce a positive response. As a matter of interest, each paper carries, in addition, brief summaries. The papers are arranged in each section or symposium in the alphabetical order of authors' names; this is not necessarily the order of presentation at the Congress.

The series is devoted to the publication of high-level monographs and surveys which cover the whole spectrum of probability and statistics. The books of the series are addressed to both experts and advanced students.

Issues for 2011- cataloged as a serial in LC

Social networking has increased drastically in recent years, resulting in an increased amount of data being created daily. Furthermore, diversity of issues and complexity of the social networks pose a challenge in social network mining. Traditional algorithm software cannot deal with such complex and vast amounts of data, necessitating the development of novel analytic approaches and tools. This reference work deals with social network aspects of big data analytics. It covers theory, practices and challenges in social networking. The book spans numerous disciplines like neural networking, deep

Read PDF M G 1 Priority Queues

learning, artificial intelligence, visualization, e-learning in higher education, e-healthcare, security and intrusion detection.

This book explores new analytical techniques and tools for the performance evaluation of distributed and integrated computer communication systems. The systems considered are those arising in LAN, MAN, WAN broadband ISDN, and ATM switching. These systems are mathematically modelled and analysed. Analytical results are presented on the basic queueing models such as multi-queue, priority queue, queueing network, queue with bursty input and superposed input, and multi-server queue. These results can be usefully applied for the performance evaluation of all the above systems.

Queueing models with the server's vacations and/or priority-based scheduling can be used for the performance evaluation of many computer and communication systems. This book provides a comprehensive and accessible analysis of these queueing models in the framework of M/G/1 systems. The method of imbedded Markov chains, the delay cycle analysis, and the method of supplementary variables are extensively used to study the M/G/1, M/G/1 with vacations, and M/G/1 with priorities. Only a basic understanding of queueing systems is assumed. A comprehensive bibliography of books on queues and teletraffic engineering completes the volume.

Read PDF M G 1 Priority Queues

The thesis deals with three priority queues. Chapters I and II treat a queueing model with two service units in tandem and a single server alternating between them. Chapter III deals with two independent service units with a single server serving alternately between them and Chapter IV treats a single server M/G/1 queue with a priority rule based on the ranking of the service times. In Chapter I the server serves the two service units alternately with a non-zero switching rule in unit 1 and a zero switching rule in unit 2. The case of zero switching rule for unit 1 is dealt in Chapter II. In both cases the distributions of busy period, virtual waiting time and queue length and their ergodic properties are studied in terms of Laplace transforms. In Chapter III we consider the alternating priority queues with a non-zero switching in each unit. Distributions of busy period and queue length are discussed. In Chapter IV we study the virtual waiting time process of an M/G/1 queue under this priority rule: within each generation customers are served in the order of shortest (or longest) service times. Here we also study the limiting behavior of the virtual waiting time, and compare the means of the limiting distributions with those of first come, first served discipline. Applications of the different priority models are discussed.

This book focuses on the tactical planning level for spare parts management. It describes a series of multi-item inventory models and presents exact and

Read PDF M G 1 Priority Queues

heuristic optimization methods, including greedy heuristics that work well for real, life-sized problems. The intended audience consists of graduate students, starting scholars in the field of spare parts inventory control, and spare parts planning specialists in the industry. In individual chapters the authors consider topics including: a basic single-location model; single-location models with multiple machine types and/or machine groups; the multi-location model with lateral transshipments; the classical METRIC model and its generalization to multi-indenture systems; and a single-location model with an explicit modeling of the repair capacity for failed parts and the priorities that one can set there. Various chapters of the book are used in a master course at Eindhoven University of Technology and in a PhD course of the Graduate Program Operations Management and Logistics (a Dutch network that organizes PhD courses in the field of OM&L). The required pre-knowledge consists of probability theory and basic knowledge of Markov processes and queuing theory. End-of-chapter problems appear for all chapters, with some answers appearing in an appendix.

Compiling the most influential papers from the IEICE Transactions in Communications, High-Performance Backbone Network Technology examines critical breakthroughs in the design and provision of effective public service

Read PDF M G 1 Priority Queues

networks in areas including traffic control, telephone service, real-time video transfer, voice and image transmission for a content delivery network (CDN), and Internet access. The contributors explore system structures, experimental prototypes, and field trials that herald the development of new IP networks that offer quality-of-service (QoS), as well as enhanced security, reliability, and function. Offers many hints and guidelines for future research in IP and photonic backbone network technologies

One of the most important issues in the development of distributed computer control systems is the ability to build software and hardware which is both reliable and time deterministic; this is an area where control engineering and computer science naturally meet. This publication brings together the latest key papers on research and development in this field, allowing cross-fertilization between the two engineering disciplines involved and allowing both academics and industrial practitioners to find new insights and learn from each other's views.

Atherosclerosis, the most common disease in humans and also the main cause of death in the Western world, only develops after an intima is formed. The intima is defined as the region of the arterial wall from the endothelial surface to the luminal margin of the media. This volume considers all aspects of intima formation based on results which had been obtained by studying three different

Read PDF M G 1 Priority Queues

models: - Spontaneous intima formation; - Experimentally induced intima formation; - Latrogenously induced intima formation.

This book gives a comprehensive presentation of cutting-edge research in communication networks with a combinatorial optimization component. The objective of the book is to advance and promote the theory and applications of combinatorial optimization in communication networks. Each chapter is written by an expert dealing with theoretical, computational, or applied aspects of combinatorial optimization.

Over the last three decades, there have been many significant changes in network technologies, architectures, and services. These changes have presented many challenges to the traffic theorists as the equipment has become largely digital, software controllable, more integrated, and highly flexible.

Telecommunications networks now support a myriad of services with network topologies and equipment capacities that can be dynamically reconfigured and reallocated in near real-time. The flexibility and sophistication of the various networks and the volatility of the demands have made nearly every element traffic sensitive and hence, amenable to stochastic modeling and probabilistic engineering. Technological advances have provided a rich and interesting set of issues for traffic research that may impact nearly every aspect of the

telecommunications industry. theory to network services, planning tools, network technologies, forecasting methods, simulation, and computing algorithms. Based on both theoretical investigations and industrial experience, this book provides an extensive approach to support the planning and optimization process for modern communication networks. The book contains a thorough survey and a detailed comparison of state-of-the-art numerical algorithms in the matrix-geometric field.

An integrated and up-to-date treatment of applied stochastic processes and queueing theory, with an emphasis on time-averages and long-run behavior. Theory demonstrates practical effects, such as priorities, pooling of queues, and bottlenecks. Appropriate for senior/graduate courses in queueing theory in Operations Research, Computer Science, Statistics, or Industrial Engineering departments. (vs. Ross, Karlin, Kleinrock, Heyman)

This research is dedicated to two main problems in finding shortest paths in the graphs. The first problem is to find shortest paths from an origin to all other vertices in non-negatively weighted graph. The second problem is the same, except it is allowed that some edges are negative. This is a more difficult problem that can be solved by relatively complicated algorithms. We attack the first problem by introducing a new data structure - Relaxed Heaps that implements

efficiently two main operations critical for the improvement of Dijkstra's shortest path algorithm. R2-heaps with suspended relaxation proposed in this research gives the best known worst-case time bounds of $O(1)$ for a `decrease_key` operation and $O(\log n)$ for a `delete_min` operation. That results in the best worst-case running time for Dijkstra's algorithm $O(m+n\log n)$, and represents an improvement over Fibonacci Heaps, which give the same, but amortized time bounds. The new data structure is simple and efficient in practical implementation. The empirical study with R2-heaps demonstrated strong advantage of its use for Dijkstra's algorithm over the "raw" Dijkstra's without heaps. This advantage is especially dramatic for sparse graphs. R2-heaps can be used in a large number of applications in which set manipulations should be implemented efficiently. For the problem of finding shortest paths in graphs with some negative edges, we present a new approach of reweighting graphs by first reducing the graph to its canonical form, which allows to apply an effective algorithm to reweight the graph to one with non-negative edges only and simultaneously to find shortest paths from an origin to all other vertices in the graph. This approach allows to give new algebraic and geometric interpretations of the problem. The experiment with the Sweeping Algorithm demonstrated $O(n \log n)$ expected time complexity. These results open new prospects to improve

algorithms for a wide variety of problems including different network optimization problems that use Dijkstra's algorithm as a subroutine, as well as multiple Operations Research and Modeling problems that can be reduced to finding shortest paths on graphs.

This practical and accessible text enables students in engineering, business, operations research, public policy and computer science to analyze stochastic systems. Emphasizing the modeling of real-life situations with stochastic elements and analyzing the resulting stochastic model, it presents the major cases of useful stochastic processes-discrete and continuous time Markov chains, renewal processes, regenerative processes, and Markov regenerative processes. The author provides user-friendly, yet rigorous coverage. He demonstrates both numerical and analytical solution methods in detail and includes numerous worked examples and exercises.

This book constitutes the refereed proceedings of the 15th International Symposium on Algorithms and Computation, ISAAC 2004, held in Hong Kong, China in December 2004. The 76 revised full papers presented were carefully reviewed and selected from 226 submissions. Among the topics addressed are computational geometry, graph computations, computational combinatorics, combinatorial optimization, computational complexity, scheduling, distributed

algorithms, parallel algorithms, data structures, network optimization, randomized algorithms, and computational mathematics more generally.

This book constitutes the refereed proceedings of the International Conference on Information Networking, ICOIN 2005 held in Jeju Island, Korea in January/February 2005. The conference focused on convergence in broadband and mobile networking. The 96 revised full papers presented were carefully reviewed and selected from 427 submissions. The papers are organized in topical sections on wireless LAN, security, TCP and congestion control, wireless ad-hoc network routing, network measurement, routing, power control in wireless networks, quality of service, high speed networks, wireless ad-hoc networks, network design, peer-to-peer networks, and applications and services.

How can analytics scholars and healthcare professionals access the most exciting and important healthcare topics and tools for the 21st century? Editors Tinglong Dai and Sridhar Tayur, aided by a team of internationally acclaimed experts, have curated this timely volume to help newcomers and seasoned researchers alike to rapidly comprehend a diverse set of thrusts and tools in this rapidly growing cross-disciplinary field. The Handbook covers a wide range of macro-, meso- and micro-level thrusts—such as market design, competing interests, global health, personalized medicine, residential care and concierge medicine, among others—and structures what has been a highly fragmented research area into a coherent scientific discipline. The handbook also provides an easy-to-comprehend introduction to five

Read PDF M G 1 Priority Queues

essential research tools—Markov decision process, game theory and information economics, queueing games, econometric methods, and data science—by illustrating their uses and applicability on examples from diverse healthcare settings, thus connecting tools with thrusts. The primary audience of the Handbook includes analytics scholars interested in healthcare and healthcare practitioners interested in analytics. This Handbook: Instills analytics scholars with a way of thinking that incorporates behavioral, incentive, and policy considerations in various healthcare settings. This change in perspective—a shift in gaze away from narrow, local and one-off operational improvement efforts that do not replicate, scale or remain sustainable—can lead to new knowledge and innovative solutions that healthcare has been seeking so desperately. Facilitates collaboration between healthcare experts and analytics scholar to frame and tackle their pressing concerns through appropriate modern mathematical tools designed for this very purpose. The handbook is designed to be accessible to the independent reader, and it may be used in a variety of settings, from a short lecture series on specific topics to a semester-long course.

Research on social networks has exploded over the last decade. To a large extent, this has been fueled by the spectacular growth of social media and online social networking sites, which continue growing at a very fast pace, as well as by the increasing availability of very large social network datasets for purposes of research. A rich body of this research has been devoted to the analysis of the propagation of information, influence, innovations, infections, practices and customs through networks. Can we build models to explain the way these propagations occur? How can we validate our models against any available real datasets consisting of a social network and propagation traces that occurred in the past? These are just

Read PDF M G 1 Priority Queues

some questions studied by researchers in this area. Information propagation models find applications in viral marketing, outbreak detection, finding key blog posts to read in order to catch important stories, finding leaders or trendsetters, information feed ranking, etc. A number of algorithmic problems arising in these applications have been abstracted and studied extensively by researchers under the garb of influence maximization. This book starts with a detailed description of well-established diffusion models, including the independent cascade model and the linear threshold model, that have been successful at explaining propagation phenomena. We describe their properties as well as numerous extensions to them, introducing aspects such as competition, budget, and time-criticality, among many others. We delve deep into the key problem of influence maximization, which selects key individuals to activate in order to influence a large fraction of a network. Influence maximization in classic diffusion models including both the independent cascade and the linear threshold models is computationally intractable, more precisely $\#P$ -hard, and we describe several approximation algorithms and scalable heuristics that have been proposed in the literature. Finally, we also deal with key issues that need to be tackled in order to turn this research into practice, such as learning the strength with which individuals in a network influence each other, as well as the practical aspects of this research including the availability of datasets and software tools for facilitating research. We conclude with a discussion of various research problems that remain open, both from a technical perspective and from the viewpoint of transferring the results of research into industry strength applications.

Scientific and Technical Aerospace Reports
Information and Influence Propagation in Social Networks
Morgan & Claypool Publishers

Read PDF M G 1 Priority Queues

Decision-making is an important task no matter the industry. Operations research, as a discipline, helps alleviate decision-making problems through the extraction of reliable information related to the task at hand in order to come to a viable solution. Integrating stochastic processes into operations research and management can further aid in the decision-making process for industrial and management problems. Stochastic Processes and Models in Operations Research emphasizes mathematical tools and equations relevant for solving complex problems within business and industrial settings. This research-based publication aims to assist scholars, researchers, operations managers, and graduate-level students by providing comprehensive exposure to the concepts, trends, and technologies relevant to stochastic process modeling to solve operations research problems.

[Copyright: 489038c156e12351e94121b095ded12d](#)