M G 1 Priority Queues

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Teletraffic Issues in an Advanced Information Society Universal-Publishers
Hardbound. 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.

Automata, Logics, and Infinite Games North Holland
The January 1994 Symposium was jointly sponsored by the ACM Special Interest Group for Automata and Computability Theory and the SIAM Activity Group on Discrete Mathematics. Among the topics in 79 (unrefereed) papers: comparing point sets under projection; on-line search in a simple polygon; low- degree tests; maximal empty ellipsoids; roots of a polynomial and its derivatives; dynamic algebraic algorithms; fast comparison of evolutionary trees; an efficient algorithm for dynamic text editing; and tight bounds for dynamic storage allocation. No index. Annotation copyright by Book News, Inc., Portland, OR

Technical Report Springer Nature
1 In a number of recent presentations – most notably at FME’96 –oneofthe foremost scientists in the ?eld of formal methods, C.A.R. Hoare,has highlighted the fact that formal methods are not the only technique for producing reliable software. This seems to have caused some controversy,not least amongst formal methods practitioners. How can one of the founding fathers of formal methods seemingly denounce the ?eld of research after over a quarter of a century of support? This is a question that has been posed recently by some formal methods skeptics. However, Prof. Hoare has not abandoned formal methods. He is reiterating, 2 albeitmoreradically,his1987view thatmorethanonetoolandnotationwillbe requiredinthepractical,industrialdevelopmentoflarge-scalecomplexcomputer systems; and not all of these tools and notations will be, or even need be, formal in nature. Formalmethods arenotasolution,butratheroneofaselectionoftechniques that have proven to be useful in the development of reliable complex systems, and to result in hardware and software systems that can be produced on-time and within a budget, while satisfying the stated requirements. After almostthree decades,the time has come to view formalmethods in the context of overall industrial-scale system development, and their relationship to othertechniquesandmethods.WeshouldnolongerconsidertheissueofwhetherwearePro-formal” or “anti-formal”, but rather the degree of formality (if any) that we need to support in system development. This is a goal of ZUM’98, the 11th International Conference of Z Users, held for the ?rst time within continental Europe in the city of Berlin, Germany.

Performance of Computer Communication Systems Springer Nature
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 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.

Priority Queues by N K Jaiswal North Holland
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(logn) for a delete_min operation. That results in the best worst-case running time for Dijkstra's algorithm O(m+nlogn), 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? logn) 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.

Computer Performance Engineering and Stochastic Modelling CRC Press
A central aim and ever-lasting dream of computer science is to put the development of hardware and software systems on a mathematical basis which is both firm and practical. Such a scientific foundation is needed especially for the construction of reactive programs, like communication protocols or control systems. For the construction and analysis of reactive systems an elegant and powerful theory has been developed based on automata theory, logical systems for the specification of nonterminating behavior, and infinite two-person games. The 19 chapters presented in this multi-

author monograph give a consolidated overview of the research results achieved in the theory of automata, logics, and infinite games during the past 10 years. Special emphasis is placed on coherent style, complete coverage of all relevant topics, motivation, examples, justification of constructions, and exercises.

ZUM '98: The Z Formal Specification Notation IGI Global

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.

The Annals of Mathematical Statistics Springer

Issues for 2011- cataloged as a serial in LC

Soviet Journal of Computer and Systems Sciences Elsevier

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.

R - Heaps with Suspended Relaxation for Manipulating Priority Queues and a New Algorithm for Reweighting Graphs Springer

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.

Spare Parts Inventory Control under System Availability Constraints SIAM

To Queue Or Not To Queue: Equilibrium Behavior in Queueing Systems focuses on the highly interesting, practical viewpoint of customer behavior and its effect on the performance of the queueing system. The book's objectives are threefold: (1) It is a comprehensive survey of the literature on equilibrium behavior of customers and servers in queueing systems. The literature is rich and considerable, but lacks continuity. This book will provide the needed continuity and cover some issues that have not been adequately treated. (2) In addition, it will examine the known results of the field, classify them and identify where and how they relate to each other. (3) And finally, it seeks to fill a number of the gaps in the literature with new results while explicitly outlining open problems in other areas. With this book, it is the authors' paramount purpose is to motivate further research and to help researchers identify new and interesting open problems.

Challenges and Directions Forward for Dealing with the Complexity of Future Smart Cyber–Physical Systems Springer Science & Business Media

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.

Engineering Cybernetics John Wiley & Sons

In this book, we study theoretical and practical aspects of computing methods for mathematical modelling of nonlinear systems. A number of computing techniques are considered, such as methods of operator approximation with any given accuracy; operator interpolation techniques including a non-Lagrange interpolation; methods of system representation subject to constraints associated with concepts of causality, memory and stationarity; methods of system representation with an accuracy that is the best within a given class of models; methods of covariance matrix estimation; methods for low-rank matrix approximations; hybrid methods based on a combination of iterative procedures and best operator approximation; and methods for information compression and filtering under condition that a filter model should satisfy restrictions associated with causality and different types of memory. As a result, the book represents a blend of new methods in general computational analysis, and specific, but also generic, techniques for study of systems theory ant its particular branches, such as optimal filtering and information compression. - Best operator approximation, - Non-Lagrange interpolation, - Generic Karhunen-Loeve transform - Generalised low-rank matrix approximation - Optimal data compression - Optimal nonlinear filtering

Algorithms and Computation Wiley-Blackwell

Priority Queues by N K JaiswalElsevier

Scientific and Technical Aerospace Reports CRC Press

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

Government Reports Annual Index Butterworth-Heinemann

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.

Analysis of Queueing Systems Priority Queues by N K Jaiswal

Throughout successive generations of information technology, the importance of the performance evaluation of software, computer architectures, and computer networks endures. For example, the performance issues of transaction processing systems and redundant arrays of independent disks replace the virtual memory and input-output problems of the 70s. ATM performance issues supercede those associated with electronic telephony of the 70s. As performance issues evolve with the technologies, so must our approach to evaluation. In System Performance Evaluation: Methodologies and Applications, top academic and industrial experts review the major issues now faced in this arena. In a series of structured, focused chapters, they present the state-of-the-art in performance methodologies and applications. They address developments in analytical modeling and its interaction with detailed analysis of measurement data. They also discuss performance evaluation methodologies for large-scale software systems - in general and in the context of critical applications, such as nuclear reactor control and air transportation systems. With its particular emphasis on network performance for wireless networks, the Internet, and ATM networking, System Performance Evaluation becomes the ideal vehicle for professionals in computer architecture, networking, and software engineering to stay up-to-date and proficient in this essential aspect of information technology.

On Certain Priority Queues Springer Science & Business Media

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.

Distributed Computer Control Systems 1994 Springer

This book constitutes the refereed proceedings of the 19th European Workshop on Computer Performance Engineering, EPEW 2023, and 27th International Conference on Analytical and Stochastic Modelling Techniques and Applications, ASMTA 2023, held in Florence, Italy, in June 2023. The 26 papers presented in this volume were carefully reviewed and selected from 35 submissions. The papers presented at the workshop reflect the diversity of modern performance engineering. The sessions covered a wide range of topics including robustness analysis, machine learning, edge and cloud computing, as well as more traditional topics on stochastic modelling, techniques and tools.

The Craft of Probabilistic Modelling Frontiers Media SA

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 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.

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