Performance Analysis Of Network Architectures

Performance of Communication SystemsLTE, WiMAX and WLAN Network Design, Optimization and Performance AnalysisPerformance Evaluation for Network Services, Systems and ProtocolsProceedings of the 2004 International Symposium on Performance Evaluation of Computer and Telecommunication SystemsPerformance Analysis of Incremental Design and Routing Strategies for High Speed NetworksComputer Networking and Performance EvaluationPerformance Analysis of the Deeplab3+ Architecture for Accurate Segmentation of Real-world Driving ImagesAgent and Multi-Agent Systems: Technologies and ApplicationsPerformance Analysis of a Metropolitan Area NetworkThe Art of Computer Systems Performance AnalysisPerformance Evaluation and Applications of ATM NetworksComputer Networks, Architecture and ApplicationsAlgorithms and Architectures for Parallel ProcessingModelling and Performance Evaluation of ATM TechnologyOptimization and Performance Analysis of High Speed Mobile Access NetworksNetwork Analysis, Architecture, and DesignArchitecture Solutions for E-Learning SystemsStorage Network Performance AnalysisMobile Ad-hoc and Sensor NetworksModeling, Design and Performance Analysis of Firewall Switch for High Speed ATM NetworksNetwork Architectures, Management, and Applications IIProceedings, Supercomputing '90Performance Analysis of Communications Networks and SystemsParallel Computer ArchitectureQuality of Service Architectures for Wireless Networks: Performance Metrics and ManagementPerformance Analysis of Telecommunications and Local Area NetworksAdvanced Technologies, Embedded and Multimedia for Human-centric ComputingModeling, Analysis and Optimization of Network-on-Chip Communication ArchitecturesPerformance Analysis of Network ArchitecturesNetwork Performance AnalysisMultiple Access ProtocolsPerformance Modelling of Communication Networks and Computer ArchitecturesNetwork Architectures, Management, and ApplicationsTraffic Grooming in Optical WDM Mesh NetworksSatellite Communications Network Design and AnalysisAdvances in Computing and Information - ICCI '90Formal Methods and Stochastic Models for Performance EvaluationComputer Network Architectures and ProtocolsPerformance Analysis of Complex Networks and SystemsPerformance Analysis of Wireless Networks

Performance of Communication Systems

This book outlines a set of issues that are critical to all of parallel architecture--communication latency, communication bandwidth, and coordination of cooperative work (across modern designs). It describes the set of techniques available in hardware and in software to address each issues and explore how the various techniques interact.

LTE, WiMAX and WLAN Network Design, Optimization and Performance Analysis

The Art of Computer Systems Performance Analysis "At last, a welcome and needed text for computer professionals who require practical, ready-to-apply techniques for performance analysis. Highly recommended!" -Dr. Leonard Kleinrock University of California, Los Angeles "An entirely refreshing text which has just the right mixture of theory and real world practice. The book is ideal for both classroom instruction and self-study." -Dr. Raymond L. Pickholtz President, IEEE Communications Society "An extraordinarily comprehensive treatment of both theoretical and practical issues." -Dr. Jeffrey P. Buzen Internationally recognized performance analysis expert ". it is the most thorough book available to date" -Dr. Erol Gelenbe Universitï¿½ Renï¿½ Descartes, Paris ". an extraordinary book.. A worthy addition to the bookshelf of any practicing computer or communications engineer" -Dr. Vinton G. Cer??? Chairman, ACM SIGCOMM "This is an unusual object, a textbook that one wants to sit down and peruse. The prose is clear and fluent, but more important, it is witty." -Allison Mankin The Mitre Washington Networking Center Newsletter

Performance Evaluation for Network Services, Systems and Protocols

Computer communication networks have come of age. Today, there is hardly any professional, particularly in engineering, that has not been the user of such a network. This proliferation requires the thorough understanding of the behavior of networks by those who are responsible for their operation as well as by those whose task it is to design such networks. This is probably the reason for the large number of books, monographs, and articles treating relevant issues, problems, and solutions in this field. Among all computer network architectures, those based on broadcast mul tiple access channels stand out in their uniqueness. These networks appear naturally in environments requiring user mobility where the use of any fixed wiring is impossible and a wireless channel is the only available option. Because of their desirable characteristics multiple access networks are now used even in environments where a wired point-to-point network could have been installed. The understanding of the operation of multiple access network through their performance analysis is the focus of this book.

Proceedings of the 2004 International Symposium on Performance Evaluation of Computer and Telecommunication Systems

The advent of Information Highways has recently been heralded as the next generation of communication systems. It is widely agreed that these highways will be based on ATM networks. However, despite the tremendous progress in the development of ATM technology, there are still many problems to resolve, such as bandwidth allocation, congestion control and quality of service. This volume addresses some of these difficulties and hopes to stimulate further action towards solving them.The papers are organized in seven main sections: Performance of ATM Switch Architectures; Quality of Service; Performance Analysis of ATM Multiplexers; Performance Issues in ATM Networks; Congestion Control; ATM Switch Architectures; and Methodologies for ATM Modelling.

Performance Analysis of Incremental Design and Routing Strategies for High Speed Networks

Your in-depth guide to analyzing and fine-tuning storage area network performance Here, for the first time, is your complete resource for optimizing SAN performance and reliability in your organization. Whether you need to evaluate an existing system or design one from the ground up, this book provides a comprehensive, vendor-neutral collection of ideas, practices, guidelines, and frameworks for approaching performance-related issues. Apply capacity planning techniques for storage systems and networks, taking into account performance analysis and price/performance considerations Review and select software for performance data collection and storage performance management Fine-tune and optimize the host system and application, storage subsystem, and storage network layers .

Computer Networking and Performance Evaluation

Performance Analysis of the Deeplab3+ Architecture for Accurate Segmentation of Real-world Driving Images

Proceedings of SPIE present the original research papers presented at SPIE conferences and other high-quality conferences in the broad-ranging fields of optics and photonics. These books provide prompt access to the latest innovations in research and technology in their respective fields. Proceedings of SPIE are among the most cited references in patent literature.

Agent and Multi-Agent Systems: Technologies and Applications

This book constitutes the refereed proceedings of the Third International Conference on Mobile Ad-hoc and Sensor Networks, MSN 2007, held in Beijing, China, in December 2007. The 73 revised full papers presented together with 2 keynote speeches were carefully reviewed and selected from a total of 304 submissions. The papers address all current issues in mobile ad hoc and sensor networks and are organized in topical sections on routing, network protocols, energy efficiency, data processing, self-organization and synchronization, deployment and application, as well as security.

Performance Analysis of a Metropolitan Area Network

Performance Analysis of Telecommunications and Local Area Networks presents information on teletraffic engineering, with emphasis on modeling techniques, queuing theory, and performance analysis for the public-switched telephone network and computer communication networks. Coverage includes twisted pair cables and coaxial cables, subscriber loops,

multistage network switching, modeling techniques for traffic flow and service time, random access networks, and much more. End-of-chapter problems with solutions are also included. Performance Analysis of Telecommunications and Local Area Networks is also a useful reference for practicing engineers but is intended as a textbook in advanced- level courses.

The Art of Computer Systems Performance Analysis

This book brings Network Calculus closer to the network professional and will also have real appeal for postgraduates studying network performance. It provides valuable analytical tools and uses J as a means of providing a practical treatment of the subject. It builds a bridge between mathematics theory and the practical use of computers in the field of network performance analysis.

Performance Evaluation and Applications of ATM Networks

Computer Networks, Architecture and Applications

This book provides a comprehensive view of the methods and approaches for performance evaluation of computer networks. It offers a clear and logical introduction to the topic, covering both fundamental concepts and practical aspects. It enables the reader to answer a series of questions regarding performance evaluation in modern computer networking scenarios, such as 'What, where, and when to measure?', 'Which time scale is more appropriate for a particular measurement and analysis?', 'Experimentation, simulation or emulation? Why?', and 'How do I best design a sound performance evaluation plan?'. The book includes concrete examples and applications in the important aspects of experimentation, simulation and emulation, and analytical modeling, with strong support from the scientific literature. It enables the identification of common shortcomings and highlights where students, researchers, and engineers should focus to conduct sound performance evaluation. This book is a useful guide to advanced undergraduates and graduate students, network engineers, and researchers who plan and design proper performance evaluation of computer networks and services. Previous knowledge of computer networks concepts, mechanisms, and protocols is assumed. Although the book provides a quick review on applied statistics in computer networking, familiarity with basic statistics is an asset. It is suitable for advanced courses on computer networking as well as for more specific courses as a secondary textbook.

Algorithms and Architectures for Parallel Processing

A technological overview of LTE and WiMAX LTE, WiMAX and WLAN Network Design, Optimization and Performance Analysis

provides a practical guide to LTE and WiMAX technologies introducing various tools and concepts used within. In addition, topics such as traffic modelling of IP-centric networks, RF propagation, fading, mobility, and indoor coverage are explored; new techniques which increase throughput such as MIMO and AAS technology are highlighted; and simulation, network design and performance analysis are also examined. Finally, in the latter part of the book Korowajczuk gives a step-by-step guide to network design, providing readers with the capability to build reliable and robust data networks. By focusing on LTE and WiMAX this book extends current network planning approaches to next generation wireless systems based on OFDMA, providing an essential resource for engineers and operators of fixed and wireless broadband data access networks. With information presented in a sequential format, LTE, WiMAX and WLAN Network Design, Optimization and Performance Analysis aids a progressive development of knowledge, complementing latter graduate and postgraduate courses while also providing a valuable resource to network designers, equipment vendors, reference material, operators, consultants, and regulators. Key Features: One of the first books to comprehensively explain and evaluate LTE Provides an unique explanation of the basic concepts involved in wireless broadband technologies and their applications in LTE, WiMAX, and WLAN before progressing to the network design Demonstrates the application of network planning for LTE and WiMAX with theoretical and practical approaches Includes all aspects of system design and optimization, such as dynamic traffic simulations, multi-layered traffic analysis, statistical interference analysis, and performance estimations

Modelling and Performance Evaluation of ATM Technology

This rigourous and self-contained book describes mathematical and, in particular, stochastic methods to assess the performance of networked systems. It consists of three parts. The first part is a review on probability theory. Part two covers the classical theory of stochastic processes (Poisson, renewal, Markov and queuing theory), which are considered to be the basic building blocks for performance evaluation studies. Part three focuses on the relatively new field of the physics of networks. This part deals with the recently obtained insights that many very different large complex networks - such as the Internet, World Wide Web, proteins, utility infrastructures, social networks - evolve and behave according to more general common scaling laws. This understanding is useful when assessing the end-to-end quality of communications services, for example, in Internet telephony, real-time video and interacting games. Containing problems and solutions, this book is ideal for graduate students taking courses in performance analysis.

Optimization and Performance Analysis of High Speed Mobile Access Networks

Network Analysis, Architecture, and Design

The theme of HumanCom and EMC is focused on the various aspects of human-centric computing for advances in computer science and its applications, embedded and multimedia computing and provides an opportunity for academic and industry professionals to discuss the latest issues and progress in the area of human-centric computing. And the theme of EMC (Advanced in Embedded and Multimedia Computing) is focused on the various aspects of embedded system, smart grid, cloud and multimedia computing, and it provides an opportunity for academic, industry professionals to discuss the latest issues and progress in the area of embedded and multimedia computing. Therefore this book will be include the various theories and practical applications in human-centric computing and embedded and multimedia computing.

Architecture Solutions for E-Learning Systems

With the growing need for effective communication networks in telecommunications and distributed computer systems, system designers need to be aware of the developments of sophisticated models for evaluating system performance. This book is ideally designed for performance engineers and system designers with the main focus of the text on queueing network models.

Storage Network Performance Analysis

Mobile Ad-hoc and Sensor Networks

"This book provides fundamental research on the architecture of learning technology systems, discussing such issues as the common structures in LTS and solutions for specific forms such as knowledge-based, distributed, or adaptive applications of e-learning. Researchers, and scholars in the fields of learning content software development, computing and educational technologies, and e-learning will find it an invaluable resource"--Provided by publisher.

Modeling, Design and Performance Analysis of Firewall Switch for High Speed ATM Networks

This book constitutes the refereed proceedings of the First International Symposium on Agent and Multi-Agent Systems: Technologies and Applications, KES-AMSTA 2007, held in Wroclaw, Poland in May/June 2007. Coverage includes agent-oriented Web applications, mobility aspects of agent systems, agents for network management, agent approaches to robotic systems, as well as intelligent and secure agents for digital content management.

Network Architectures, Management, and Applications II

Provides the mathematical, stochastic and graph theoretic methods to analyse the performance and robustness of complex networks and systems.

Proceedings, Supercomputing '90

This is a book about the bricks and mortar from which are built those edifices that will permeate the emerging information society of the future-computer networks. For many years such computer networks have played an indirect role in our daily lives as the hidden servants of banks, airlines, and stores. Now they are becoming more visible as they enter our offices and homes and directly become part of our work, entertainment, and daily living. The study of how computer networks function is a combined study of communication theory and computer science, two disciplines appearing to have very little in common. The modern communication scientist wishing to work in this area soon finds that solving the traditional problems of transmission, modulation, noise immunity, and error bounds in getting the signal from one point to another is just the beginning of the challenge. The communication must be in the right form to be routed properly, to be handled without congestion, and to be understood at various points in the network. As for the computer scientist, he finds that his discipline has also changed. The fraction of computers that belong to networks is increasing all the time. And for a typical single computer, the fraction of its execution load, storage occupancy, and system management problems that are in volved with being part of a network is also growing.

Performance Analysis of Communications Networks and Systems

This authoritative book provides a thorough understanding of the fundamental concepts of satellite communications (SATCOM) network design and performance assessments. You find discussions on a wide class of SATCOM networks using satellites as core components, as well as coverage key applications in the field. This in-depth resource presents a broad range of critical topics, from geosynchronous Earth orbiting (GEO) satellites and direct broadcast satellite systems, to low Earth orbiting (LEO) satellites, radio standards and protocols.This invaluable reference explains the many specific uses of satellite networks, including small-terminal wireless and mobile communications systems. Moreover, this book presents advanced topics such as satellite RF link analyses, optimum transponder loading, on-board processing, antenna characteristics, protected systems, information assurance, and spread spectrums. You are introduced to current and future SATCOM systems and find details on their performance supportabilities. This cutting-edge book also presents trends in multimedia satellite applications and IP services over satellites.

Parallel Computer Architecture

Parallel and distributed computing in the 1980s and 1990s had great in?uence onapplication developmentin science, engineering andbusiness computing. The improvements in computation and communication capabilities have enabled the creation of demanding applications in critical domains such as the environment, health, aerospace, and other areas of science and technology. Similarly, new classesofapplicationsareenabledbytheavailabilityofheterogeneouslarge-scale distributed systems which are becoming available nowadays (based on techno- giessuchasgridandpeer-to-peersystems).Parallelcomputingsystemsexploita large diversity of computer architectures, from supercomputers, shared-memory or distributed-memory multi processors, to local networks and clusters of p- sonal computers. With the recent emergence of multi core architectures, parallel computing is now set to achieve "mainstream" status. Approaches that have been advocated by parallelcomputing researchersin the past are now being utilized in a number of software libraries and hardware systems that are available for everyday use. Parallel computing ideas have also come to dominate areas such as multi user gaming (especially in the development of gaming engines based on "cell" arc- tectures) – often ignored by many "serious" researchers in the past, but which now are set to have a growing user base of tens of millions across the world. In recent years, focus has also shifted to support energy e?ciency in com- tation, with some researchers proposing a new metric of performance based on Flops/Watt.

Quality of Service Architectures for Wireless Networks: Performance Metrics and Management

Three approaches can be applied to determine the performance of parallel and distributed computer systems: measurement, simulation, and mathematical methods. This book introduces various network architectures for parallel and distributed systems as well as for systems-on-chips, and presents a strategy for developing a generator for automatic model derivation. It will appeal to researchers and students in network architecture design and performance analysis.

Performance Analysis of Telecommunications and Local Area Networks

The research work in this thesis will consist of demonstrating the capability of the most recent DeepLabv3+ network to achieve accurate automatic segmentation of real-world driving images. To accomplish accurate automated segmentation we will develop seven separate networks to maximum mean intersection over union (MIoU) scores on the Berkeley Deep Drive 100k (BDD100k) dataset [1]. This dataset claims to be diverse in terms of geographic, environmental and weather diversity, which provides a broad variance in scene diversity. As such, the BDD100k dataset yields an opportunity to provide more real-world representative training to our network allowing the trained network to be more robust to a wide variety of driving environments. BDD100k's segmentation dataset consists of a set of 7,000 training images and 1,000 validation images with 18 distinct object classes labeled at the pixel-level. Currently, application of the DeepLabV3+ architecture to the BDD100k dataset is a novel approach to automatic segmentation in the pursuit of self-driving vehicles,

which require accurate visual scene understanding. From our seven networks, we will provide analyses of their performance under a variety of modified network architectures and optimization methods.

Advanced Technologies, Embedded and Multimedia for Human-centric Computing

Examines state-of-the art material on communication systems, particularly its applications in developing countries. It is intended to motivate students, teachers, engineers and other professionals involved in the various network disciplines to expand research in this area.

Modeling, Analysis and Optimization of Network-on-Chip Communication Architectures

The remarkable advances in digital communication techniques have made computer networking and its performance evaluation very important and attractive when coping with the growing complexity of the information society. The scope of this book ranges from theoretical results in performance evaluation techniques, to their applications in computer networking (local and wide area networks), satellite communication, network architecture, parallel processing systems and database systems. The contributions to modelling and measurement methodologies, and the presentation of the state-of-the-art of performance evaluation techniques, will make this volume of interest to anyone concerned with these disciplines.

Performance Analysis of Network Architectures

Traditionally, design space exploration for Systems-on-Chip (SoCs) has focused on the computational aspects of the problem at hand. However, as the number of components on a single chip and their performance continue to increase, the communication architecture plays a major role in the area, performance and energy consumption of the overall system. As a result, a shift from computation-based to communication-based design becomes mandatory. Towards this end, network-on-chip (NoC) communication architectures have emerged recently as a promising alternative to classical bus and point-to-point communication architectures. In this dissertation, we study outstanding research problems related to modeling, analysis and optimization of NoC communication architectures. More precisely, we present novel design methodologies, software tools and FPGA prototypes to aid the design of application-specific NoCs.

Network Performance Analysis

Information Highways are widely considered as the next generation of high speed communication systems. These highways will be based on emerging Broadband Integrated Services Digital Networks (B-ISDN), which - at least in principle - are

envisioned to support not only all the kinds of networking applications known today but also future applications which are not as yet understood fully or even anticipated. Thus, B-ISDNs release networking processes from the limitations which the communications medium has imposed historically. The operational generality stems from the versatility of Asynchronous Transfer Mode (ATM) which is the transfer mode adopted by ITU-T for broadband public ISDN as well as wide area private ISDN. A transfer mode which provides the transmission, multiplexing and switching core that lies at the foundations of a communication network. ATM is designed to integrate existing and future voice, audio, image and data services. Moreover, ATM aims to minimise the complexity of switching and buffer management, to optimise intermediate node processing and buffering and to bound transmission delays. These design objectives are met at high transmission speeds by keeping the basic unit of ATM transmission - the ATM cell - short and of fixed length.

Multiple Access Protocols

This volume contains selected and invited papers presented at ICCI '90. Topics range over theory of comput- ing, algorithms and programming, data and software engineering, computer architecture, concurrency, parallelism, communication and networking.

Performance Modelling of Communication Networks and Computer Architectures

Traditionally, networking has had little or no basis in analysis or architectural development, with designers relying on technologies they are most familiar with or being influenced by vendors or consultants. However, the landscape of networking has changed so that network services have now become one of the most important factors to the success of many third generation networks. It has become an important feature of the designer's job to define the problems that exist in his network, choose and analyze several optimization parameters during the analysis process, and then prioritize and evaluate these parameters in the architecture and design of the system. Network Analysis, Architecture, and Design, Third Edition, uses a systems methodology approach to teaching these concepts, which views the network (and the environment it impacts) as part of the larger system, looking at interactions and dependencies between the network and its users, applications, and devices. This approach matches the new business climate where customers drive the development of new services and the book discusses how networks can be architected and designed to provide many different types of services to customers. With a number of examples, analogies, instructor tips, and exercises, this book works through the processes of analysis, architecture, and design step by step, giving designers a solid resource for making good design decisions. With examples, guidelines, and general principles McCabe illuminates how a network begins as a concept, is built with addressing protocol, routing, and management, and harmonizes with the interconnected technology around it. Other topics covered in the book are learning to recognize problems in initial design, analyzing optimization parameters, and then

prioritizing these parameters and incorporating them into the architecture and design of the system. This is an essential book for any professional that will be designing or working with a network on a routine basis. Substantially updated design content includes ad hoc networks, GMPLS, IPv6, and mobile networking Written by an expert in the field that has designed several large-scale networks for government agencies, universities, and corporations Incorporates real-life ideas and experiences of many expert designers along with case studies and end-of-chapter exercises

Network Architectures, Management, and Applications

The design and development of cost-effective mobile broadband wireless access networks is a key challenge for many mobile network operators. The over-dimensioning or under-dimensioning of an access network results in both additional costs and customer dissatisfaction. Thushara Weerawardane introduces new transport technologies and features for High Speed Packet Access (HSPA) and Long-Term Evolution (LTE) networks. Using advanced scientific methods, he proposes new adaptive flow control and enhanced congestion control algorithms, then defends them with highly-developed analytical models derived from Markov chains. For faster analysis, compared to long-lasting detailed simulations, these models provide optimum network performance and ensure reliable quality standards for end users during transport network congestion. Further, the author investigates and analyzes LTE transport network performance by introducing novel traffic differentiation models and buffer management techniques during intra-LTE handovers.

Traffic Grooming in Optical WDM Mesh Networks

Satellite Communications Network Design and Analysis

In this thesis, we investigate the performance of wireless ad hoc networks. First, we propose a multi-copy relaying scheme for packets in mobile ad hoc networks (MANETs), which reduces the delivery delay without changing the throughput order. We also present a method for computing the interference caused from other nodes. Second, we study the trade-off among mobility, capacity, and delay for wireless ad hoc networks. By considering nodes that are subject to restrained movements, we found that mobility is an entity that can be exchanged with capacity and delay. Furthermore, the throughput-delay trade-off is investigated for nodes employing directional antennas and the results are compared with previous work. Third, we propose a new communication scheme based on collaboration among nodes where the transmission (exchange) of packets is concurrently possible by employing a many-to-many communication framework. We present the principles of operation for such a technique, followed by two practical examples of implementation using FDMA/CDMA, and FDMA/MIMO systems. Shannon capacity, throughput and delay are computed and compared with related works.

Advances in Computing and Information - ICCI '90

"This book further explores various issues and proposed solutions for the provision of Quality of Service (QoS) on the wireless networks"--Provided by publisher.

Formal Methods and Stochastic Models for Performance Evaluation

Issues for 2011- cataloged as a serial in LC

Computer Network Architectures and Protocols

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.

Performance Analysis of Complex Networks and Systems

This book constitutes the refereed proceedings of the 4th European Performance Engineering Workshop, EPEW 2007, held in Berlin, Germany, September 27-28, 2007. The 20 revised full papers presented were carefully reviewed and selected from 53 submissions. The papers are organized in topical sections on Markov Chains, Process Algebra, Wireless Networks, Queueing Theory and Applications of Queueing, Benchmarking and Bounding, Grid and Peer-to-Peer Systems.

Performance Analysis of Wireless Networks

Optical networks based on wavelength-division multiplexing (WDM) tech nology offer the promise to satisfy the bandwidth requirements of the Inter net infrastructure, and provide a scalable solution to support the bandwidth needs of future applications in the local and wide areas. In a waveleng- routed network, an optical channel, referred to as a lightpath, is set up between two network nodes for communication. Using WDM technology, an optical fiber link can support multiple non-overlapping wavelength channels, each of which can be operated at the data rate of 10 Gbps or 40 Gbps today. On the other hand, only a fraction of customers are expected to have a need for such a high bandwidth. Due to the large cost of the optical backbone infrastruc ture and enormous WDM channel capacity, connection requests with diverse low-speed bandwidth requirements need to be efficiently groomed onto hi- capacity wavelength channels. This book investigates the optimized design, provisioning, and performance analysis of traffic-groomable WDM networks, and proposes and evaluates

new WDM network architectures. Organization of the Book Significant amount of research effort has been devoted to traffic grooming in SONET/WDM ring networks since the current telecom networks are mainly deployed in the form of ring topologies or interconnected rings. As the long-haul backbone networks are evolving to irregular mesh topologies, traffic grooming in optical WDM mesh networks becomes an extremely important and practical research topic for both industry and academia.

ROMANCE ACTION & ADVENTURE MYSTERY & THRILLER BIOGRAPHIES & HISTORY CHILDREN'S YOUNG ADULT FANTASY HISTORICAL FICTION HORROR LITERARY FICTION NON-FICTION SCIENCE FICTION