Influence Blocking Maximization In Social Networks Under

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Optimization in Large Scale Problems

Neural Information Processing

Decision and Game Theory for Security

Computational Data and Social Networks This book constitutes the refereed proceedings of the 8th International Conference on Computational Data and Social Networks, CSoNet 2019, held in Ho Chi Minh City, Vietnam, in November 2019. The 22 full and 8 short papers presented in this book were carefully reviewed and selected from 120 submissions. The papers appear under the following topical headings: Combinatorial Optimization and Learning; Influence Modeling, Propagation, and Maximization; NLP and Affective Computing; Computational Methods for Social Good; and User Profiling and Behavior Modeling.

Algorithmic Aspects in Information and Management 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.
Probabilistic Approaches For Social Media Analysis: Data, Community And Influence Dynamics of Information Systems: Algorithmic Approaches presents recent developments and results found by participants of the Fourth International Conference on the Dynamics of Information Systems, which took place at the University of Florida, Gainesville FL, USA on February 20-22, 2012. The purpose of this conference was to bring together scientists and engineers from industry, government, and universities to exchange knowledge and results in a broad range of topics relevant to the theory and practice of the dynamics of information systems. Dynamics of Information plays an increasingly critical role in our society. The influence of information on social, biological, genetic, and military systems must be better understood to achieve large advances in the capability and understanding of these systems. Applications are widespread and include: detection of terrorist networks, design of highly efficient businesses, computer networks, quantum entanglement, genome modeling, multi-robotic systems, and industrial and manufacturing safety. The book contains state-of-the-art work on theory and practice relevant to the dynamics of information systems. It covers algorithmic approaches to numerical computations with infinite and infinitesimal numbers; presents important problems arising in service-oriented systems, such as dynamic composition and analysis of modern service-oriented information systems and estimation of customer service times on a rail network from GPS data; addresses the complexity of the problems arising in stochastic and distributed systems; and discusses modulating communication for improving multi-agent learning convergence. Network issues—in particular minimum-risk maximum-clique problems, vulnerability of sensor networks, influence diffusion, community detection, and link prediction in social network analysis, as well as a comparative analysis of algorithms for transmission network expansion planning—are described in later chapters.

Open Problems in Optimization and Data Analysis This book constitutes the thoroughly refereed post-conference proceedings of the 16th International Workshop on Multi-Agent-Based Simulation, MABS 2015, held in Istanbul, Turkey, in May 2015. The workshop was held in conjunction with the 14th International Conference on Autonomous Agents and Multi-agent Systems, AAMAS 2015. The 12 revised full papers included in this volume ware carefully selected from 22 submissions. The papers focus on the influence of social sciences and multi-agent systems, with a strong application/empirical vein, and its emphasis is stressed on exploratory agent based simulation as a principled way of undertaking scientific research in the social sciences and using social theories as an inspiration to new frameworks and developments in multi-agent systems.

Web Technologies and Applications This book surveys the well-known results and also presents a series of original results on the mathematical modeling of social networks, focusing on models of informational influence, control and confrontation. Online social networks are intended for communication, opinion exchange and information acquisition for their members, but recently, online social networks have been intensively used as the objects and means of informational control and an arena of informational confrontation. They have become a powerful informational influence tool, particularly for the manipulation of individuals, social groups and society as a whole, as well as a battlefield of information warfare (cyberwars). This book aimed at under- and postgraduate university students as well as experts in information technology and modeling of social systems and processes.
Combinatorial Optimization and Applications This book constitutes the proceedings of the 11th International Workshop on Frontiers in Algorithmics, FAW 2017, held in Chengdu, China, in June 2017. The 24 papers presented in this volume were carefully reviewed and selected from 61 submissions. They deal with all aspects of theoretical computer science and algorithms.

2020 Spring Simulation Conference (SpringSim) This two-volume set LNCS 10827 and LNCS 10828 constitutes the refereed proceedings of the 23rd International Conference on Database Systems for Advanced Applications, DASFAA 2018, held in Gold Coast, QLD, Australia, in May 2018. The 83 full papers, 21 short papers, 6 industry papers, and 8 demo papers were carefully selected from a total of 360 submissions. The papers are organized around the following topics: network embedding; recommendation; graph and network processing; social network analytics; sequence and temporal data processing; trajectory and streaming data; RDF and knowledge graphs; text and data mining; medical data mining; security and privacy; search and information retrieval; query processing and optimizations; data quality and crowdsourcing; learning models; multimedia data processing; and distributed computing.

Data Mining and Big Data This book constitutes the refereed proceedings of the 23rd International Conference on Computing and Combinatorics, COCOON 2017, held in Hong Kong, China, in August 2017. The 56 full papers papers presented in this book were carefully reviewed and selected from 119 submissions. The papers cover various topics, including algorithms and data structures, complexity theory and computability, algorithmic game theory, computational learning theory, cryptography, computational biology, computational geometry and number theory, graph theory, and parallel and distributed computing.

Handbook of Research on Big Data Storage and Visualization Techniques This LNCS double volume LNCS 9931-9932 constitutes the refereed proceedings of the 18th Asia-Pacific Conference APWeb 2016 held in Suzhou, China, in September 2016. The 79 full papers and presented together with 24 short papers and 17 demo papers were carefully reviewed and selected from 215 submissions. The focus of the conference was on following subjects: Spatio-temporal, Textual and Multimedia Data Management Social Media Data Analysis Modelling and Learning with Big Data Streaming and Real-time Data Analysis Recommendation System Data Quality and Privacy Query Optimization and Scalable Data Processing

Computational Data and Social Networks This book constitutes the refereed proceedings of the 4th International Conference on Computational Social Networks, CSoNet 2015, held in Beijing, China, in August 2015. The 23 revised full papers and 3 short papers presented together with 2 extended abstracts were carefully reviewed and selected from 101 submissions and cover topics on social information diffusion; network clustering and community structure; social link prediction and recommendation; and social network structure analysis.

Combinatorial Optimization and Applications This volume constitutes the proceedings of the 12th International
Conference on Algorithmic Aspects in Information and Management, AAIM 2018, held in Dallas, Texas, USA, in December 2018. The 25 full papers presented were carefully reviewed and selected. The papers deal with current trends of research on algorithms, data structures, operation research, combinatorial optimization and their applications.

Broad Learning Through Fusions 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.

Principles of Social Networking The digital age has presented an exponential growth in the amount of data available to individuals looking to draw conclusions based on given or collected information across industries. Challenges associated with the analysis, security, sharing, storage, and visualization of large and complex data sets continue to plague data scientists and analysts alike as traditional data processing applications struggle to adequately manage big data. The Handbook of Research on Big Data Storage and Visualization Techniques is a critical scholarly resource that explores big data analytics and technologies and their role in developing a broad understanding of issues pertaining to the use of big data in multidisciplinary fields. Featuring coverage
on a broad range of topics, such as architecture patterns, programing systems, and computational energy, this publication is geared towards professionals, researchers, and students seeking current research and application topics on the subject.

Wireless Algorithms, Systems, and Applications This book constitutes the refereed proceedings of three workshops held at the 18th Asia-Pacific Web Conference, APWeb 2016, in Suzhou, China, in September 2016: the Second International Workshop on Web Data Mining and Applications, WDMA 2016, the First International Workshop on Graph Analytics and Query Processing, GAP 2016, and the First International Workshop on Spatial-temporal Data Management and Analytics, SDMA 2016. The 27 full papers included in this book were carefully reviewed and selected from 37 submissions. The goal of these workshops is to promote the new research directions and applications, especially on web data, graph data, and spatial-temporal data management and analytics.

Computing and Combinatorics This book offers a clear and comprehensive introduction to broad learning, one of the novel learning problems studied in data mining and machine learning. Broad learning aims at fusing multiple large-scale information sources of diverse varieties together, and carrying out synergistic data mining tasks across these fused sources in one unified analytic. This book takes online social networks as an application example to introduce the latest alignment and knowledge discovery algorithms. Besides the overview of broad learning, machine learning and social network basics, specific topics covered in this book include network alignment, link prediction, community detection, information diffusion, viral marketing, and network embedding.

Web Information Systems Engineering -- WISE 2013 This book constitutes the refereed proceedings of the 4th International Conference on Data Mining and Big Data, DMBD 2019, held in Chiang Mai, Thailand, in July 2019. The 26 full papers and 8 short papers presented in this volume were carefully reviewed and selected from 79 submissions. They are organized in topical sections named: data analysis; prediction; clustering; classification; mining pattern; mining tasks.

Web Technologies and Applications This two-volume set, LNAI 9077 + 9078, constitutes the refereed proceedings of the 19th Pacific-Asia Conference on Advances in Knowledge Discovery and Data Mining, PAKDD 2015, held in Ho Chi Minh City, Vietnam, in May 2015. The proceedings contain 117 paper carefully reviewed and selected from 405 submissions. They have been organized in topical sections named: social networks and social media; classification; machine learning; applications; novel methods and algorithms; opinion mining and sentiment analysis; clustering; outlier and anomaly detection; mining uncertain and imprecise data; mining temporal and spatial data; feature extraction and selection; mining heterogeneous, high-dimensional and sequential data; entity resolution and topic-modeling; itemset and high-performance data mining; and recommendations.

Advances in Knowledge Discovery and Data Mining This two-volume set (CCIS 955 and CCIS 956) constitutes the refereed proceedings of the Second International Conference on Advanced Informatics for Computing Research,
ICAICR 2018, held in Shimla, India, in July 2018. The 122 revised full papers presented were carefully reviewed and selected from 427 submissions. The papers are organized in topical sections on computing methodologies; hardware; information systems; networks; security and privacy; computing methodologies.

Social Networks: Models of Information Influence, Control and Confrontation The seven-volume set of LNCS 11301-11307, constitutes the proceedings of the 25th International Conference on Neural Information Processing, ICONIP 2018, held in Siem Reap, Cambodia, in December 2018. The 401 full papers presented were carefully reviewed and selected from 575 submissions. The papers address the emerging topics of theoretical research, empirical studies, and applications of neural information processing techniques across different domains. The second volume, LNCS 11302, is organized in topical sections on other neural network models, stability analysis, optimization, and supervised learning.

Dynamics of Information Systems: Algorithmic Approaches The three volume set provides a systematic overview of theories and technique on social network analysis. Volume 3 of the set mainly focuses on the propagation models and evolution rules of information. Information retrieval and dissemination, topic discovery and evolution, algorithms of influence maximization are discussed in detail. It is an essential reference for scientist and professionals in computer science.

Wireless Algorithms, Systems, and Applications This unique compendium focuses on the acquisition and analysis of social media data. The approaches concern both the data-intensive characteristics and graphical structures of social media. The book addresses the critical problems in social media analysis, which representatively cover its lifecycle. The must-have volume is an excellent reference text for professionals, researchers, academics and graduate students in AI and databases.

Computational Science – ICCS 2020 This book constitutes the refereed proceedings of the 15th Annual International Conference on Combinatorial Optimization and Applications, COCOA 2021, which took place in Tianjin, China, during December 17-19, 2021. The 55 papers presented in this volume were carefully reviewed and selected from 122 submissions. They deal with combinatorial optimization and its applications in general, focusing on algorithms design, theoretical and experimental analysis, and applied research of general algorithmic interest.

Multi-Agent-Based Simulation XIX SpringSim 20 is a conference centered on the advancement of the theory, practice and applications of Modeling and Simulation (M&S) The conference is organized in 10 thematic tracks AI and Simulation Annual Simulation Symposium Communications and Networking Simulation Cyber Physical Systems Cyber Security Engineering High Performance Computing Humans, Societies and Artificial Agents Modeling and Simulation in Medicine M&S for Smart Energy Systems Theory and Foundations of Modeling and Simulation SpringSim 20 also includes tutorials, M&S Demo sessions, and a student colloquium.
Optimization in Science and Engineering Computational and theoretical open problems in optimization, computational geometry, data science, logistics, statistics, supply chain modeling, and data analysis are examined in this book. Each contribution provides the fundamentals needed to fully comprehend the impact of individual problems. Current theoretical, algorithmic, and practical methods used to circumvent each problem are provided to stimulate a new effort towards innovative and efficient solutions. Aimed towards graduate students and researchers in mathematics, optimization, operations research, quantitative logistics, data analysis, and statistics, this book provides a broad comprehensive approach to understanding the significance of specific challenging or open problems within each discipline. The contributions contained in this book are based on lectures focused on “Challenges and Open Problems in Optimization and Data Science” presented at the Deucalion Summer Institute for Advanced Studies in Optimization, Mathematics, and Data Science in August 2016.

Biologically Inspired Techniques in Many-Criteria Decision Making This book presents new and innovative current discoveries in social networking which contribute enough knowledge to the research community. The book includes chapters presenting research advances in social network analysis and issues emerged with diverse social media data. The book also presents applications of the theoretical algorithms and network models to analyze real-world large-scale social networks and the data emanating from them as well as characterize the topology and behavior of these networks. Furthermore, the book covers extremely debated topics, surveys, future trends, issues, and challenges.

Computational Social Networks This volume constitutes the proceedings of the 14th International Conference on Algorithmic Aspects in Information and Management, AAIM 2020, held in Jinhua, China in August 2020. The 39 full papers and 17 short papers presented were carefully reviewed and selected from 76 submissions. The papers deal with emerging important algorithmic problems with a focus on the fundamental background, theoretical technology development, and real-world applications associated with information and management analysis, modeling and data mining. Special considerations are given to algorithmic research that was motivated by real-world applications.

Information and Communication This book constitutes the proceedings of the 14th International Conference on Web Information Systems Engineering, WISE 2013, held in Nanjing, China, in October 2013. The 48 full papers, 29 short papers, and 10 demo and 5 challenge papers, presented in the two-volume proceedings LNCS 8180 and 8181, were carefully reviewed and selected from 198 submissions. They are organized in topical sections named: Web mining; Web recommendation; Web services; data engineering and database; semi-structured data and modeling; Web data integration and hidden Web; challenge; social Web; information extraction and multilingual management; networks, graphs and Web-based business processes; event processing, Web monitoring and management; and innovative techniques and creations.

Advanced Informatics for Computing Research Optimization in Science and Engineering is dedicated in honor of the 60th birthday of Distinguished Professor Panos M. Pardalos. Pardalos’s past and ongoing work has made a
significant impact on several theoretical and applied areas in modern optimization. As tribute to the diversity of Dr. Pardalos's work in Optimization, this book comprises a collection of contributions from experts in various fields of this rich and diverse area of science. Topics highlight recent developments and include: Deterministic global optimization Variational inequalities and equilibrium problems Approximation and complexity in numerical optimization Non-smooth optimization Statistical models and data mining Applications of optimization in medicine, energy systems, and complex network analysis This volume will be of great interest to graduate students, researchers, and practitioners, in the fields of optimization and engineering.

Web Technologies and Applications This book constitutes the refereed proceedings of the 11th International Conference on Decision and Game Theory for Security, GameSec 2020, held in College Park, MD, USA, in October 2020. Due to COVID-19 pandemic the conference was held virtually The 21 full papers presented together with 2 short papers were carefully reviewed and selected from 29 submissions. The papers focus on machine learning and security; cyber deception; cyber-physical systems security; security of network systems; theoretic foundations of security games; emerging topics.

Frontiers in Algorithmics The three-volume set constitutes the proceedings of the 16th International Conference on Wireless Algorithms, Systems, and Applications, WASA 2021, which was held during June 25-27, 2021, in Nanjing, China. The 103 full and 57 short papers presented in these proceedings were carefully reviewed and selected from 315 submissions. Part III of the set includes the papers of the contributors that took part in the workshops co-located with the conference. The following topics are covered in the volume: network protocols, signal processing, wireless telecommunication systems, routing algorithms, cryptography, local area networks, and others.

Web Information Systems Engineering This volume constitutes the proceedings of the 14th International Conference on Combinatorial Optimization and Applications, COCOA 2020, held in Dallas, TX, USA, in December 2020. The 55 full papers presented in this volume were carefully reviewed and selected from 104 submissions. The papers are grouped into the following topics: Approximation Algorithms; Scheduling; Network Optimization; Complexity and Logic; Search, Facility and Graphs; Geometric Problem; Sensors, Vehicles and Graphs; and Graph Problems. Due to the Corona pandemic this event was held virtually.

Information and Influence Propagation in Social Networks This book addresses many-criteria decision-making (MCDM), a process used to find a solution in an environment with several criteria. In many real-world problems, there are several different objectives that need to be taken into account. Solving these problems is a challenging task and requires careful consideration. In real applications, often simple and easy to understand methods are used; as a result, the solutions accepted by decision makers are not always optimal solutions. On the other hand, algorithms that would provide better outcomes are very time consuming. The greatest challenge facing researchers is how to create effective algorithms that will yield optimal solutions with low time complexity. Accordingly, many current research efforts are focused on the implementation of biologically inspired algorithms.
(BIAs), which are well suited to solving uni-objective problems. This book introduces readers to state-of-the-art developments in biologically inspired techniques and their applications, with a major emphasis on the MCDM process. To do so, it presents a wide range of contributions on e.g. BIAs, MCDM, nature-inspired algorithms, multi-criteria optimization, machine learning and soft computing.

Big Data Analytics The seven-volume set LNCS 12137, 12138, 12139, 12140, 12141, 12142, and 12143 constitutes the proceedings of the 20th International Conference on Computational Science, ICCS 2020, held in Amsterdam, The Netherlands, in June 2020.* The total of 101 papers and 248 workshop papers presented in this book set were carefully reviewed and selected from 719 submissions (230 submissions to the main track and 489 submissions to the workshops). The papers were organized in topical sections named: Part I: ICCS Main Track Part II: ICCS Main Track Part III: Advances in High-Performance Computational Earth Sciences: Applications and Frameworks; Agent-Based Simulations, Adaptive Algorithms and Solvers; Applications of Computational Methods in Artificial Intelligence and Machine Learning; Biomedical and Bioinformatics Challenges for Computer Science Part IV: Classifier Learning from Difficult Data; Complex Social Systems through the Lens of Computational Science; Computational Health; Computational Methods for Emerging Problems in (Dis-)Information Analysis Part V: Computational Optimization, Modelling and Simulation; Computational Science in IoT and Smart Systems; Computer Graphics, Image Processing and Artificial Intelligence Part VI: Data Driven Computational Sciences; Machine Learning and Data Assimilation for Dynamical Systems; Meshfree Methods in Computational Sciences; Multiscale Modelling and Simulation; Quantum Computing Workshop Part VII: Simulations of Flow and Transport: Modeling, Algorithms and Computation; Smart Systems: Bringing Together Computer Vision, Sensor Networks and Machine Learning; Software Engineering for Computational Science; Solving Problems with Uncertainties; Teaching Computational Science; Uncertainty Quantification for Computational Models *The conference was canceled due to the COVID-19 pandemic.

Database Systems for Advanced Applications This book constitutes the refereed proceedings, presented on the 20th International Conference on Web Information Systems Engineering, WISE 2019 and on The International Workshop on Web Information Systems in the Era of AI, held in Hong Kong and Macau, China. Due to the problems in Hong Kong, WISE 2019 has been postponed until January 2020. The 7 workshop papers, 5 demo papers and 3 tutorial papers presented were carefully reviewed and selected from numerous submissions. The papers are organized in the following sections: tutorials; demos; the International Workshop on Web Information Systems in the Era of AI.

Multi-Agent Based Simulation XVI This book constitutes the refereed proceedings of the 7th International Conference on Computational Data and Social Networks, CSOnet 2018, held in Shanghai, China, in December 2018. The 44 revised full papers presented in this book together with 2 extended abstracts, were carefully reviewed and selected from 106 submissions. The topics cover the fundamental background, theoretical technology development, and real-world applications associated with complex and data network analysis, minimizing influence of rumors on social networks, blockchain Markov modelling, fraud detection, data mining, internet of things (IoT), internet of
vehicles (IoV), and others.

Algorithmic Aspects in Information and Management This book constitutes the refereed proceedings of the 17th Asia-Pacific Conference APWeb 2015 held in Guangzhou, China, in September 2015. The 67 full papers and presented together with 3 industrial track papers and 7 demonstration track papers were carefully reviewed and selected from 146 submissions. The papers cover a wide spectrum of Web-related data management problems, and provide a thorough view on the rapid advances of technical solutions.

Advances in Knowledge Discovery and Data Mining This book constitutes the proceedings of the 12th International Conference on Wireless Algorithms, Systems, and Applications, WASA 2017, held in Guilin, China, in June 2017. The 70 full papers and 9 short papers presented in this book were carefully reviewed and selected from 238 submissions. The papers cover various topics such as cognitive radio networks; wireless sensor networks; cyber-physical systems; distributed and localized algorithm design and analysis; information and coding theory for wireless networks; localization; mobile cloud computing; topology control and coverage; security and privacy; underwater and underground networks; vehicular networks; internet of things; information processing and data management; programmable service interfaces; energy-efficient algorithms; system and protocol design; operating system and middleware support; and experimental test-beds, models and case studies.

Optimization in Large Scale Problems This book constitutes the thoroughly refereed post-conference proceedings of the 19th International Workshop on Multi-Agent-Based Simulation, MABS 2019, held in Stockholm Sweden, in July 2018 as part of the Federated AI Meeting, FAIM 2018. The 10 revised full papers included in this volume were carefully selected from 15 submissions. They focus on finding efficient solutions to model complex social systems in such areas as economics, management, and organisational and social sciences. In all these areas, agent theories, metaphors, models, analysis, experimental designs, empirical studies, and methodological principles, converge into simulation as a way of achieving explanations and predictions, exploration and testing of hypotheses, better designs and systems.

Neural Information Processing The two-volume set LNAI 7818 + LNAI 7819 constitutes the refereed proceedings of the 17th Pacific-Asia Conference on Knowledge Discovery and Data Mining, PAKDD 2013, held in Gold Coast, Australia, in April 2013. The total of 98 papers presented in these proceedings was carefully reviewed and selected from 363 submissions. They cover the general fields of data mining and KDD extensively, including pattern mining, classification, graph mining, applications, machine learning, feature selection and dimensionality reduction, multiple information sources mining, social networks, clustering, text mining, text classification, imbalanced data, privacy-preserving data mining, recommendation, multimedia data mining, stream data mining, data preprocessing and representation.

Decision and Game Theory for Security This volume provides resourceful thinking and insightful management
solutions to the many challenges that decision makers face in their predictions, preparations, and implementations of the key elements that our societies and industries need to take as they move toward digitalization and smartness. The discussions within the book aim to uncover the sources of large-scale problems in socio-industrial dilemmas, and the theories that can support these challenges. How theories might also transition to real applications is another question that this book aims to uncover. In answer to the viewpoints expressed by several practitioners and academicians, this book aims to provide both a learning platform which spotlights open questions with related case studies. The relationship between Industry 4.0 and Society 5.0 provides the basis for the expert contributions in this book, highlighting the uses of analytical methods such as mathematical optimization, heuristic methods, decomposition methods, stochastic optimization, and more. The book will prove useful to researchers, students, and engineers in different domains who encounter large scale optimization problems and will encourage them to undertake research in this timely and practical field. The book splits into two parts. The first part covers a general perspective and challenges in a smart society and in industry. The second part covers several case studies and solutions from the operations research perspective for large scale challenges specific to various industry and society related phenomena.

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