

Raj Madhavan
Edward Tunstel
Elena Messina
Editors

Performance Evaluation and Benchmarking of Intelligent Systems

 Springer

Performance Evaluation And Benchmarking Of Intelligent Systems

Jin-Ying Zhang



Performance Evaluation And Benchmarking Of Intelligent Systems:

Performance Evaluation and Benchmarking of Intelligent Systems Raj Madhavan,Edward Tunstel,Elena Messina,2009-09-18 To design and develop capable dependable and affordable intelligent systems their performance must be measurable Scientific methodologies for standardization and benchmarking are crucial for quantitatively evaluating the performance of emerging robotic and intelligent systems technologies There is currently no accepted standard for quantitatively measuring the performance of these systems against user defined requirements and furthermore there is no consensus on what objective evaluation procedures need to be followed to understand the performance of these systems The lack of reproducible and repeatable test methods has precluded researchers working towards a common goal from exchanging and communicating results inter comparing system performance and leveraging previous work that could otherwise avoid duplication and expedite technology transfer Currently this lack of cohesion in the community hinders progress in many domains such as manufacturing service healthcare and security By providing the research community with access to standardized tools reference data sets and open source libraries of solutions researchers and consumers will be able to evaluate the cost and benefits associated with intelligent systems and associated technologies In this vein the edited book volume addresses performance evaluation and metrics for intelligent systems in general while emphasizing the need and solutions for standardized methods To the knowledge of the editors there is not a single book on the market that is solely dedicated to the subject of performance evaluation and benchmarking of intelligent systems

Application of Intelligent Systems in Multi-modal Information Analytics Vijayan Sugumaran,Zheng Xu,Huiyu Zhou,2020-07-20 This book presents the proceedings of the 2020 International Conference on Intelligent Systems Applications in Multi modal Information Analytics held in Changzhou China on June 18 19 2020 It provides comprehensive coverage of the latest advances and trends in information technology science and engineering It addresses a number of broad themes including data mining multi modal informatics agent based and multi agent systems for health and education informatics which inspire the development of intelligent information technologies The contributions cover a wide range of topics such as AI applications and innovations in health and education informatics data and knowledge management multi modal application management and web social media mining for multi modal informatics Outlining promising future research directions the book is a valuable resource for students researchers and professionals and a useful reference guide for newcomers to the field

Intelligent Systems for Sustainable Person-Centered Healthcare Dalia Kriksciuniene,Virgilijus Sakalauskas,2022-02-17 This open access book establishes a dialog among the medical and intelligent system domains for igniting transition toward a sustainable and cost effective healthcare The Person Centered Care PCC positions a person in the center of a healthcare system instead of defining a patient as a set of diagnoses and treatment episodes The PCC based conceptual background triggers enhanced application of Artificial Intelligence as it dissolves the limits of processing traditional medical data records clinical tests and

surveys Enhanced knowledge for diagnosing treatment and rehabilitation is captured and utilized by inclusion of data sources characterizing personal lifestyle and health literacy and it involves insights derived from smart ambience and wearables data community networks and the caregivers feedback The book discusses intelligent systems and their applications for healthcare data analysis decision making and process design tasks The measurement systems and efficiency evaluation models analyze ability of intelligent healthcare system to monitor person health and improving quality of life

Advances in Intelligent Systems and Computing II Natalia Shakhovska, Volodymyr Stepashko, 2017-11-20 This book reports on new theories and applications in the field of intelligent systems and computing It covers computational and artificial intelligence methods as well as advances in computer vision current issues in big data and cloud computing computation linguistics and cyber physical systems It also reports on data mining and knowledge extraction technologies as well as central issues in intelligent information management Written by active researchers the respective chapters are based on papers presented at the International Conference on Computer Science and Information Technologies CSIT 2017 held on September 5-8 2017 in Lviv Ukraine and at two workshops accompanying the conference one on inductive modeling jointly organized by the Lviv Polytechnic National University and the National Academy of Science of Ukraine and another on project management which was jointly organized by the Lviv Polytechnic National University the International Project Management Association the Ukrainian Project Management Association the Kazakhstan Project Management Association and Nazarbayev University Given its breadth of coverage the book provides academics and professionals with extensive information and a timely snapshot of the field of intelligent systems and is sure to foster new discussions and collaborations among different groups Human Performance in Automated and Autonomous Systems Mustapha Mouloua, Peter A.

Hancock, 2019-09-19 This book is devoted to the examination of emerging practical issues related to automated and autonomous systems The book highlights the significance of these emergent technologies that determine the course of our daily lives Each unique chapter highlights human factors and engineering concerns across real world applications including matters related to aviation and healthcare human robot interaction transportation systems cybersecurity and cyber defense This book also depicts the boundaries that separate humans from machine as we continue to become ever more immersed in and symbiotic with these fast emerging technologies Automation across many occupations has transitioned the human to a role of monitoring machines presenting challenges related to vigilance and workload This book identifies the importance of an approach to automated technology that emphasizes the human user at the center of the design process Features Provides perspectives on the role of the individual and teams in complex technical systems such as aviation healthcare and medicine Presents the development of highly autonomous systems related to human safety and performance Examines solutions to human factors challenges presented by modern threats to data privacy and cybersecurity Discusses human perceptual and cognitive capabilities underwriting to the design of automated and autonomous systems Provides in depth expert reviews of

context related developments in automation and human robot teaming Human Performance in Automated and Autonomous Systems Emerging Issues and Practical Perspectives applies scientific theory directly to real world systems where automation and autonomous technology is implemented **Producing Artificial Intelligent Systems** Maria Isabel

Aldinhas Ferreira, 2024-06-04 The fast development of intelligent technologies in the previous years their boost during the COVID crisis and their huge acceleration with the proliferation of the Large Language Models has led industry governance legislators and regulators to race to achieve production control striving to define regional and global regulatory frameworks capable of guaranteeing their safe deployment In an evolving and uneven regulatory context balancing fast technological development and the safe and ethical use of these new disruptive technologies with an expected total economic impact of 4 4 trillion dollars annually becomes presently the biggest challenge The present book addresses the fundamental role played by the three milestones Benchmarking Standardization and Certification that are part of the developmental loop of all products in developed economies The essential role played by these milestones and the importance of defining accurate general and specific metrics is addressed in this book with particular case studies in the domains of Robotics and AI Chapter Trust in Robot Benchmarking and Benchmarking for Trustworthy Robots is available open access under a Creative Commons Attribution 4 0 International License via link [springer.com](https://www.springer.com) **Agent and Multi-Agent Systems: Technologies and**

Applications Piotr Jedrzejowicz, Ngoc Thanh Nguyen, Robert J. Howlett, Lakhmi C. Jain, 2010-06-09 This book constitutes the proceedings of the 4th KES International Symposium on Agent and Multi Agent Systems KES AMSTA 2010 held in June 2010 in Gdynia Poland The discussed field is concerned with the development and analysis of AI based problem solving and control architectures for both single agent and multiple agent systems Only 83 papers were selected for publication in both volumes which focus on topics such as Multi Agent Systems Design and Implementation Negotiations and Social Issues Web Services and Semantic Web Cooperation Coordination and Teamwork Agent Based Modeling Simulation and Decision Making Multi Agent Applications Management and e Business Mobile Agents and Robots and Machine Learning *Autonomy and Artificial Intelligence: A Threat or Savior?* W.F. Lawless, Ranjeev Mittu, Donald Sofge, Stephen Russell, 2017-08-24 This book explores how Artificial Intelligence AI by leading to an increase in the autonomy of machines and robots is offering opportunities for an expanded but uncertain impact on society by humans machines and robots To help readers better understand the relationships between AI autonomy humans and machines that will help society reduce human errors in the use of advanced technologies e g airplanes trains cars this edited volume presents a wide selection of the underlying theories computational models experimental methods and field applications While other literature deals with these topics individually this book unifies the fields of autonomy and AI framing them in the broader context of effective integration for human autonomous machine and robotic systems The contributions written by world class researchers and scientists elaborate on key research topics at the heart of effective human machine robot systems integration These topics include for example

computational support for intelligence analyses the challenge of verifying today's and future autonomous systems comparisons between today's machines and autism implications of human information interaction on artificial intelligence and errors systems that reason the autonomy of machines robots buildings and hybrid teams where hybrid reflects arbitrary combinations of humans machines and robots The contributors span the field of autonomous systems research ranging from industry and academia to government Given the broad diversity of the research in this book the editors strove to thoroughly examine the challenges and trends of systems that implement and exhibit AI the social implications of present and future systems made autonomous with AI systems with AI seeking to develop trusted relationships among humans machines and robots and the effective human systems integration that must result for trust in these new systems and their applications to increase and to be sustained

Knowledge Management and Acquisition for Intelligent Systems Shiqing Wu, Wenli Yang, Muhammad Bilal Amin, Byeong-Ho Kang, Guandong Xu, 2023-11-03 This book constitutes the refereed proceedings of the 19th Principle and Practice of Data and Knowledge Acquisition Workshop PKAW 2023 held in conjunction with the 20th Pacific Rim International Conference on Artificial Intelligence PRICAI 2023 in November 2023 in Jakarta Indonesia The 9 full papers and 2 short papers included in this volume were carefully reviewed and selected from 28 initial submissions They are organized in the topical section such as machine learning natural language processing and intelligent systems

Advances in Neuroergonomics and Cognitive Engineering Carryl Baldwin, 2017-06-12 This book offers a broad perspective on the field of cognitive engineering and neuroergonomics covering emerging practices and future trends toward the harmonious integration of human operators with computational systems It reports on novel theoretical findings on mental workload and stress activity theory human reliability error and risk and neuroergonomic measures alike together with a wealth of cutting edge applications Further the book describes key advances in our understanding of cognitive processes including mechanisms of perception memory reasoning and motor response with a special emphasis on their role in interactions between humans and other elements of computer based systems Based on the AHFE's main track on Neuroergonomics and Cognitive Engineering held on July 17-21 2017 in Los Angeles California USA it provides readers with a comprehensive overview of the current challenges in cognitive computing and factors influencing human performance

Transactions on Computational Collective Intelligence VII Ngoc-Thanh Nguyen, 2012-07-18 These Transactions publish research in computer based methods of computational collective intelligence CCI and their applications in a wide range of fields such as the Semantic Web social networks and multiagent systems TCCI strives to cover new methodological theoretical and practical aspects of CCI understood as the form of intelligence that emerges from the collaboration and competition of many individuals artificial and or natural The application of multiple computational intelligence technologies such as fuzzy systems evolutionary computation neural systems consensus theory etc aims to support human and other collective intelligence and to create new forms of CCI in natural and or artificial systems This seventh issue contains a collection of ten carefully

selected and thoroughly revised contributions The Measure of All Minds José Hernández-Orallo, 2017-01-11 Are psychometric tests valid for a new reality of artificial intelligence systems technology enhanced humans and hybrids yet to come Are the Turing Test the ubiquitous CAPTCHAs and the various animal cognition tests the best alternatives In this fascinating and provocative book Jos Hernández Orallo formulates major scientific questions integrates the most significant research developments and offers a vision of the universal evaluation of cognition By replacing the dominant anthropocentric stance with a universal perspective where living organisms are considered as a special case long standing questions in the evaluation of behavior can be addressed in a wider landscape Can we derive task difficulty intrinsically Is a universal g factor a common general component for all abilities theoretically possible Using algorithmic information theory as a foundation the book elaborates on the evaluation of perceptual developmental social verbal and collective features and critically analyzes what the future of intelligence might look like **An Assessment of the National Institute of Standards and**

Technology Manufacturing Engineering Laboratory National Research Council, Division on Engineering and Physical Sciences, Laboratory Assessments Board, Panel on Manufacturing Engineering, 2010-10-27 The mission of the Manufacturing Engineering Laboratory MEL of the National Institute of Standards and Technology NIST is to promote innovation and the competitiveness of U S manufacturing through measurement science measurement services and critical technical contributions to standards The MEL is organized in five divisions Intelligent Systems Manufacturing Metrology Manufacturing Systems Integration Precision Engineering and Fabrication Technology A panel of experts appointed by the National Research Council NRC assessed the first four divisions **Metal Cutting Theory and Practice** David A. Stephenson, John S. Agapiou, 2018-09-03 A Complete Reference Covering the Latest Technology in Metal Cutting Tools Processes and Equipment Metal Cutting Theory and Practice Third Edition shapes the future of material removal in new and lasting ways Centered on metallic work materials and traditional chip forming cutting methods the book provides a physical understanding of conventional and high speed machining processes applied to metallic work pieces and serves as a basis for effective process design and troubleshooting This latest edition of a well known reference highlights recent developments covers the latest research results and reflects current areas of emphasis in industrial practice Based on the authors extensive automotive production experience it covers several structural changes and includes an extensive review of computer aided engineering CAE methods for process analysis and design Providing updated material throughout it offers insight and understanding to engineers looking to design operate troubleshoot and improve high quality cost effective metal cutting operations The book contains extensive up to date references to both scientific and trade literature and provides a description of error mapping and compensation strategies for CNC machines based on recently issued international standards and includes chapters on cutting fluids and gear machining The authors also offer updated information on tooling grades and practices for machining compacted graphite iron nickel alloys and other hard to machine materials as well as a

full description of minimum quantity lubrication systems tooling and processing practices In addition updated topics include machine tool types and structures cutting tool materials and coatings cutting mechanics and temperatures process simulation and analysis and tool wear from both chemical and mechanical viewpoints Comprised of 17 chapters this detailed study Describes the common machining operations used to produce specific shapes or surface characteristics Contains conventional and advanced cutting tool technologies Explains the properties and characteristics of tools which influence tool design or selection Clarifies the physical mechanisms which lead to tool failure and identifies general strategies for reducing failure rates and increasing tool life Includes common machinability criteria tests and indices Breaks down the economics of machining operations Offers an overview of the engineering aspects of MQL machining Summarizes gear machining and finishing methods for common gear types and more Metal Cutting Theory and Practice Third Edition emphasizes the physical understanding and analysis for robust process design troubleshooting and improvement and aids manufacturing engineering professionals and engineering students in manufacturing engineering and machining processes programs **Experimental**

Methodology for Human-Robot Interaction Leimin Tian,Tina L.Y. Wu,Nicole L. Robinson,Pamela

Carreno-Medrano,Wesley P. Chan,Maram Sakr,Elahe Abdi,Elizabeth A. Croft,Dana Kulić,2025-06-30 Leading figures in Australian robotics research provide an overview and guidance for human robot interaction HRI experimental design and evaluation methodologies that consider the ethical implications of the research and its applications from a human centred and contextual perspective The authors explain introductory and advanced topics in HRI with a focus on human centred evaluation and ethical practices They also provide an online interactive checklist tool for novice HRI researchers and students to deploy when designing their own studies The book is structured into three parts In Part I the authors first review fundamental methodologies and provide an interactive checklist tool of the HRI experimental study life cycle to guide beginners to the field Part II introduces an expanded set of approaches to support researchers and practitioners to create high quality study designs that draw on practices from human computer interaction human centred artificial intelligence psychology and social science and advance ethical HRI research Finally in Part III the authors discuss a selection of HRI studies as examples of how the introduced methodologies are adopted which will support the readers to further understand the fundamental and advanced methodologies described in Parts I and II The diverse collection of case studies enables readers to grasp the state of the art and apply what they have learned in their own practices This book is a vital resource for both students new to the field and experienced researchers and practitioners The book s practical focus and clear elucidation of relevant case studies from its introduction to the HRI experimental study life cycle through to advanced methods emerging in the field ensures that this will greatly benefit progress in the field with human centred and ethical experimental methodology **Manufacturing In The Era Of 4th Industrial Revolution: A World Scientific Reference (In 3**

Volumes) ,2021-01-13 The era of the fourth industrial revolution has fundamentally transformed the manufacturing

landscape Products are getting increasingly complex and customers expect a higher level of customization and quality Manufacturing in the Era of 4th Industrial Revolution explores three technologies that are the building blocks of the next generation advanced manufacturing The first technology covered in Volume 1 is Additive Manufacturing AM AM has emerged as a very popular manufacturing process The most common form of AM is referred to as three dimensional 3D printing Overall the revolution of additive manufacturing has led to many opportunities in fabricating complex customized and novel products As the number of printable materials increases and AM processes evolve manufacturing capabilities for future engineering systems will expand rapidly resulting in a completely new paradigm for solving a myriad of global problems The second technology is industrial robots which is covered in Volume 2 on Robotics Traditionally industrial robots have been used on mass production lines where the same manufacturing operation is repeated many times Recent advances in human safe industrial robots present an opportunity for creating hybrid work cells where humans and robots can collaborate in close physical proximities This Cobots or collaborative robots has opened up to opportunity for humans and robots to work more closely together Recent advances in artificial intelligence are striving to make industrial robots more agile with the ability to adapt to changing environments and tasks Additionally recent advances in force and tactile sensing enable robots to be used in complex manufacturing tasks These new capabilities are expanding the role of robotics in manufacturing operations and leading to significant growth in the industrial robotics area The third technology covered in Volume 3 is augmented and virtual reality Augmented and virtual reality AR VR technologies are being leveraged by the manufacturing community to improve operations in a wide variety of ways Traditional applications have included operator training and design visualization with more recent applications including interactive design and manufacturing planning human and robot interactions ergonomic analysis information and knowledge capture and manufacturing simulation The advent of low cost solutions in these areas is accepted to accelerate the rate of adoption of these technologies in the manufacturing and related sectors Consisting of chapters by leading experts in the world Manufacturing in the Era of 4th Industrial Revolution provides a reference set for supporting graduate programs in the advanced manufacturing area

Managing Indoor Environments and Energy in Buildings with Integrated Intelligent Systems Triantafyllia Nikolaou,Dionysia Kolokotsa,George Stavrakakis,Apostolos Apostolou,Corneliu Munteanu,2015-08-22 Featuring a detailed analysis and presentation of innovative researches methods algorithms and technologies that deal with integrated intelligent systems for the efficient management of energy and indoor environment in buildings this book encompasses the regulations directives and standards regarding the energy and the indoor environment of buildings as well as a literature review and discussion on the current state of the art for buildings energy efficiency classification Maximizing reader insight into this topic with the aid of simulation models for buildings and energy audits at office buildings are presented including tables and figures with the detailed information regarding the parameters inputs outputs and the outcomes of the surveys This book also

outlines the development of a Virtual Building Dataset VBD of office buildings as an innovative benchmarking and classification tool The proposed methodology overcomes the difficulties and time required for collecting the necessary massive building constructional and energy bills data by creating them virtually using efficient stochastic simulation and by taking into account all parameters that may affect the energy performance and indoor thermal comfort of office buildings The knowledge and ideas conveyed by the book are supported with equations and algorithms and 137 colored figures and 55 tables and features a rich bibliography references and web sources The book contains the basic knowledge undergraduate and especially postgraduate courses on the emergent subject of energy management and saving in buildings The innovative aspects and guides of the book give serious opportunities to the postgraduate students in this scientific area to further develop their research skills and capabilities

AI-Driven DevOps Decision-Making: Transforming Software Development Workflows with Intelligent Systems Sumanth Tatineni, 2024-03-22 This book provides a comprehensive exploration of the AI Driven DevOps Decision Making system a groundbreaking approach that leverages artificial intelligence to optimize decision making processes within DevOps workflows Drawing upon the foundational research and patent application the book delves deep into the innovative methodologies technical frameworks and real world applications of this AI driven system Beginning with the conceptual underpinnings of DevOps and the challenges of dynamic software development environments the book outlines how AI can revolutionize traditional workflows by providing real time insights predictive analytics and adaptive learning capabilities It provides an in depth understanding of the core components and algorithms of the system as well as its practical implementation across different stages of the DevOps lifecycle Each chapter combines theoretical knowledge with practical insights supported by case studies and examples that illustrate the tangible benefits of adopting this intelligent decision making framework The book also envisions the future of AI in DevOps highlighting opportunities for innovation and further research in optimizing software development practices By the end of this book readers will have a thorough understanding of how to integrate AI driven decision making tools within their DevOps environments ultimately leading to more efficient agile and reliable software development processes

Proceedings of Third International Conference on Intelligent Computing, Information and Control Systems A. Pasumpon Pandian, Ram Palanisamy, M. Narayanan, Tomonobu Senju, 2022-03-14 This book is a collection of papers presented at the International Conference on Intelligent Computing Information and Control Systems ICICCS 2021 It encompasses various research works that help to develop and advance the next generation intelligent computing and control systems The book integrates the computational intelligence and intelligent control systems to provide a powerful methodology for a wide range of data analytics issues in industries and societal applications The book also presents the new algorithms and methodologies for promoting advances in common intelligent computing and control methodologies including evolutionary computation artificial life virtual infrastructures fuzzy logic artificial immune systems neural networks and various neuro hybrid methodologies This book is pragmatic for researchers

academicians and students dealing with mathematically intransigent problems ICT for Intelligent Systems Jyoti Choudrie, Eva Tuba, Thinagaran Perumal, Amit Joshi, 2024-09-26 This book gathers papers addressing state of the art research in all areas of information and communication technologies and their applications in intelligent computing cloud storage data mining and software analysis It presents the outcomes of the 8th International Conference on Information and Communication Technology for Intelligent Systems ICTIS 2024 held in Las Vegas USA The book is divided into six volumes It discusses the fundamentals of various data analysis techniques and algorithms making it a valuable resource for researchers and practitioners alike

Performance Evaluation And Benchmarking Of Intelligent Systems: Bestsellers in 2023 The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous captivating novels enthralling the hearts of readers worldwide. Lets delve into the realm of bestselling books, exploring the fascinating narratives that have enthralled audiences this year. The Must-Read : Colleen Hoover's "It Ends with Us" This heartfelt tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover masterfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can prevail. Performance Evaluation And Benchmarking Of Intelligent Systems : Taylor Jenkins Reid's "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reid's captivating storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Performance Evaluation And Benchmarking Of Intelligent Systems : Delia Owens' "Where the Crawdads Sing" This captivating coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens spins a tale of resilience, survival, and the transformative power of nature, entrancing readers with its evocative prose and mesmerizing setting. These top-selling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a exceptional and thrilling novel that will keep you wondering until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

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