

Artificial Intelligence Research And Development Proceedings Of The 15th International Conference Of The Catalan Association For Artificial In Artificial Intelligence And Applications

The papers in this volume are the refereed papers presented at AI-2011, the Thirty-first SGA I International Conference on Innovative Techniques and Applications of Artificial Intelligence, held in Cambridge in December 2011 in both the technical and the application streams. They present new and innovative developments and applications, divided into technical stream sections on Planning, Evolutionary Algorithms, Speech and Vision, and Machine Learning, followed by application stream sections on Knowledge Discovery and Data Mining, Machine Learning, Evolutionary Algorithms and AI in Action. The volume also includes the text of short papers presented as posters at the conference. This is the twenty-eighth volume in the Research and Development in Intelligent Systems series, which also incorporates the nineteenth volume in the Applications and Innovations in Intelligent Systems series. These series are essential reading for those who wish to keep up to date with developments in this

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important field.

The main scope of this publication is to promote collaborations among research groups in the community and to interchange ideas, allowing researchers to get a quick overview of the state of the art. In this volume, the contents are arranged into seven subjects: Theoretical Aspects and Applications of the Aggregation Operators, Robotics and Computer Vision, MultiAgent Systems, Machine Learning, Problems Resolution in AI, Constraint Reasoning and Planning, The global assessment of the contributions contained in this volume is positive. They give a representative sample of the current state of the art in the Catalanian Artificial Intelligence Community.

Artificial intelligence in all its forms is increasingly interwoven into all our lives, and remains one of the most lively areas of discussion and interest in technology today. This book presents the proceedings of the 20th International Conference of the Catalan Association for Artificial Intelligence (CCIA'2017): 'Recent Advances in Artificial Intelligence Research and Development', held in Deltebre, Terres de l'Ebre, Spain, in October 2017. Despite its title, this annual conference is not only for researchers from the Catalan Countries, but is an international event which attracts participants from countries all around the world. In total, 41 original contributions were submitted to CCIA'2017. Of these, 21 were accepted

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as long papers for oral presentation and 13 were accepted as short papers to be presented as posters. These 34 submissions appear in this book organized around a number of different topics including: agents and multi-agent systems; artificial vision and image processing; machine learning; artificial neural networks; cognitive modeling; fuzzy logic and reasoning; robotics; and AI applications. The book also includes abstracts of the 3 presentations by invited speakers. The book offers a representative sample of the current state of the art in the artificial intelligence community, and will be of interest to all those working with AI worldwide.

Artificial Intelligence for Drug Development, Precision Medicine, and Healthcare covers exciting developments at the intersection of computer science and statistics. While much of machine-learning is statistics-based, achievements in deep learning for image and language processing rely on computer science's use of big data. Aimed at those with a statistical background who want to use their strengths in pursuing AI research, the book:

- Covers broad AI topics in drug development, precision medicine, and healthcare.
- Elaborates on supervised, unsupervised, reinforcement, and evolutionary learning methods.
- Introduces the similarity principle and related AI methods for both big and small data problems.
- Offers a balance of statistical and algorithm-based approaches to AI.
- Provides

examples and real-world applications with hands-on R code. - Suggests the path forward for AI in medicine and artificial general intelligence. As well as covering the history of AI and the innovative ideas, methodologies and software implementation of the field, the book offers a comprehensive review of AI applications in medical sciences. In addition, readers will benefit from hands on exercises, with included R code.

The Era of Artificial Intelligence, Machine Learning and Data Science in the Pharmaceutical Industry examines the drug discovery process, assessing how new technologies have improved effectiveness. Artificial intelligence and machine learning are considered the future for a wide range of disciplines and industries, including the pharmaceutical industry. In an environment where producing a single approved drug costs millions and takes many years of rigorous testing prior to its approval, reducing costs and time is of high interest. This book follows the journey that a drug company takes when producing a therapeutic, from the very beginning to ultimately benefitting a patient's life. This comprehensive resource will be useful to those working in the pharmaceutical industry, but will also be of interest to anyone doing research in chemical biology, computational chemistry, medicinal chemistry and bioinformatics. Demonstrates how the prediction of toxic effects is performed, how to reduce costs in testing

compounds, and its use in animal research Written by the industrial teams who are conducting the work, showcasing how the technology has improved and where it should be further improved Targets materials for a better understanding of techniques from different disciplines, thus creating a complete guide The past 50 years have witnessed a revolution in computing and related communications technologies. The contributions of industry and university researchers to this revolution are manifest; less widely recognized is the major role the federal government played in launching the computing revolution and sustaining its momentum. Funding a Revolution examines the history of computing since World War II to elucidate the federal government's role in funding computing research, supporting the education of computer scientists and engineers, and equipping university research labs. It reviews the economic rationale for government support of research, characterizes federal support for computing research, and summarizes key historical advances in which government-sponsored research played an important role. Funding a Revolution contains a series of case studies in relational databases, the Internet, theoretical computer science, artificial intelligence, and virtual reality that demonstrate the complex interactions among government, universities, and industry that have driven the field. It offers a series of lessons that identify factors contributing to the

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success of the nation's computing enterprise and the government's role within it. "Artificial Intelligence (AI) forms an essential branch of computer science. The field covered by AI is multiform and gathers subjects as various as the engineering of knowledge, the automatic treatment of the language, the training, to quote only some of them. The history of AI knew various periods of evolution passing from periods of doubt at very fertile periods. AI is now in its maturity and did not remain an isolated field of computer science, but approached various fields like statistics, data analysis, linguistics and cognitive psychology or databases. AI is focused on providing solutions to real life problems and is used now in routine in medicine, economics, military or strategy game. This book focuses on subjects including: Machine Learning, Reasoning, Neural Networks, Computer Vision, Planning and Robotics and Multiagent Systems. All the papers collected in this volume would be of interest to any computer scientist or engineer interested in AI."

The Catalan Association for Artificial Intelligence (ACIA) was formed in 1994 with the aim of promoting cooperation between researchers in artificial intelligence within the Catalan speaking community. This objective has been achieved and widened since the association held their first conference in 1998, and the annual conference of the association has become an international event presenting and discussing the latest research in AI, which attracts AI

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researchers from around the world. This book presents the proceedings of the 19th International Conference of the Catalan Association for Artificial Intelligence (CCIA 2016), held in Barcelona, Spain, on 19-21 October. From a total of 50 original contributions, 16 long papers and 22 short papers were accepted for presentation at the conference on the basis of their relevance, originality and technical validity. The book is divided into 7 sections: Invited Talks (synopsis only); Vision and Robotics; Logic, Constraint Satisfaction and Qualitative Theory; Classification and Clustering; Modelling; Planning and Recommender Systems; Lexical Knowledge Representation and Natural Language Processing. Providing an overview of the latest developments in the field, this book will be of interest to all those whose work involves research into, and the application of, artificial intelligence.

This book begins with the past and present of the subversive technology of artificial intelligence, clearly analyzes the overall picture, latest developments and development trends of the artificial intelligence industry, and conducts in-depth research on the competitive situation of various countries. The book also provides an in-depth analysis of the opportunities and challenges that artificial intelligence brings to individuals, businesses, and society. For readers who want to fully understand artificial intelligence, this book provides an important reference and is a must-read. Tencent Research Institute is a public strategy research unit of Tencent. Taking advantage of Tencent's diversified products, enriched practices and huge data asset, TRI focuses its effort on major issues of internet development. Through the open, collaborative research platform it has built, TRI aims to unite leading brains from walks of life in promoting healthy, orderly development of digital economy and society by providing cutting-edge thinking. Internet Law Research Center of China Academy of Information and

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Communications Technology(CAICT): Internet Law Research Center of CAICT is committed to research on legal and policy issues in the fields of information and communication, the Internet, big data, and related international rules, market opening and institutional reforms in the WTO, providing legislative and policy advice to relevant government departments, and building platforms for communication and collaboration between government and enterprises. Tencent AI Lab was established in April 2016, with more than 70 world-class AI PhDs and more than 300 experienced application engineers. The lab specializes in basic research in the fields of machine learning, computer vision, speech recognition and natural language understanding. It combines content, games, social and platform tools to explore the four AI applications. Tencent open platform is provided as a large stage for developers who can use the various product capabilities provided by Tencent's open platform to develop excellent applications and tools, and gain huge traffic and revenue. In the AI era, the platform brings together top AI technologies, professionals and industry resources to incubate and build high-quality AI entrepreneurial projects to help AI capabilities apply in the segmentation field.--

Artificial Intelligence Research and DevelopmentIOS Press

Artificial Intelligence (AI) is a scientific field of longstanding tradition, with origins in the early years of computer science. Today AI has reached a level of maturity that allows us to build highly sophisticated systems which perform very different tasks. Nevertheless, its evolution has opened up a number of new problems, ranging from specific algorithms to system integration, which remain elusive and assure a long life for this research field. Research progress in this area is today an international challenge that must be supported by world-class meetings and organizations, but in spite of this fact, there is also an objective need for meetings and

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organizations that support and disseminate research at other levels. This book focuses on new and original research on Artificial Intelligence.

Artificial intelligence has now become an indispensable tool at the centre of problem-solving in a huge range of digital technologies, and remains one of the most vibrant topics for discussion and research. This book presents a compilation of the articles presented at the 22nd (2019) edition of the International Conference of the Catalan Association for Artificial Intelligence (CCIA), held in Mallorca, Spain, from 23 – 25 October 2019. This annual conference is an international event that serves as a meeting point for researchers into artificial intelligence based in the area of the Catalan speaking territories and for researchers from around the world. The book is divided into 8 sections. The first contains summaries of the 3 invited talks presented at the conference: ‘New methods for fusing information and the computational brain’, by Javier Fernandez; ‘From correlation to imagination: Deep generative models for artificial intelligence’ by Joan Serrà; and ‘Explainable AI’ by Anna Monreale. The remaining 7 sections contain 47 papers covering ethics and E-governance; machine learning; constraints and SAT, optimization and fuzzy; data science, recommender systems and decision support systems; agent-based and multi-agent systems; computer vision; and sentiment analysis and text analysis. The book provides an overview of the latest developments in the field, and as such will be of interest to all those whose work involves the study and application of artificial intelligence.

Following significant advances in deep learning and related areas interest in artificial intelligence (AI) has rapidly grown. In particular, the application of AI in drug discovery provides an opportunity to tackle challenges that previously have been difficult to solve, such as

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predicting properties, designing molecules and optimising synthetic routes. Artificial Intelligence in Drug Discovery aims to introduce the reader to AI and machine learning tools and techniques, and to outline specific challenges including designing new molecular structures, synthesis planning and simulation. Providing a wealth of information from leading experts in the field this book is ideal for students, postgraduates and established researchers in both industry and academia.

Providing a representative selection of papers promoting synergies in the research community, this text includes papers on neural networks, computer vision, applications, machine learning, reasoning, planning and robotics, and multi-agent systems.

This book constitutes the refereed proceedings of the First Southern African Conference on Artificial Intelligence Research, SACAIR 2020, held in Muldersdrift, South Africa, in February 2021. Due to the COVID-19 pandemic the SACAIR 2020 has been postponed to February 2021. The 19 papers presented were thoroughly reviewed and selected from 53 submissions. They are organized on the topical sections on ?AI for ethics and society; AI in information systems, AI for development and social good; applications of AI; knowledge representation and reasoning; machine learning theory.

One hundred years after the birth of Alan Turing, the great pioneer of computer science, artificial intelligence has become so much a part of everyday life that it is hard to imagine the world without it. This book contains papers from the 15th

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International Conference of the Catalan Association of Artificial Intelligence (CCIA 2012), held at the Universitat d'Alicant, Spain, in October 2012. Since 1994 the Catalan Association of Artificial Intelligence (ACIA) has fostered cooperation between researchers in artificial intelligence within the Catalan speaking community. The annual CCIA is its international conference, a platform where not only researchers from Catalan speaking countries, but also those working in artificial intelligence worldwide, have found a place to show, discuss and publish the results of their researches and developments. The 23 papers presented here, which include contributions from the AI community all over the world, cover topics such as KDD, DM and machine learning; natural language processing and recommenders; computer vision; robotics; AI for optimization problems and AI applications in the real world. The book also includes the contributions of the two invited keynote speakers at the conference - Oscar Cordón and Eduardo Nebot - which respectively address the subjects of real-world applications of soft artificial intelligence, and challenges of automation and safety in field robotics.

Advances in artificial intelligence (AI) highlight the potential of this technology to affect productivity, growth, inequality, market power, innovation, and employment. This volume seeks to set the agenda for economic research on the

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impact of AI. It covers four broad themes: AI as a general purpose technology; the relationships between AI, growth, jobs, and inequality; regulatory responses to changes brought on by AI; and the effects of AI on the way economic research is conducted. It explores the economic influence of machine learning, the branch of computational statistics that has driven much of the recent excitement around AI, as well as the economic impact of robotics and automation and the potential economic consequences of a still-hypothetical artificial general intelligence. The volume provides frameworks for understanding the economic impact of AI and identifies a number of open research questions. Contributors: Daron Acemoglu, Massachusetts Institute of Technology Philippe Aghion, Collège de France Ajay Agrawal, University of Toronto Susan Athey, Stanford University James Bessen, Boston University School of Law Erik Brynjolfsson, MIT Sloan School of Management Colin F. Camerer, California Institute of Technology Judith Chevalier, Yale School of Management Iain M. Cockburn, Boston University Tyler Cowen, George Mason University Jason Furman, Harvard Kennedy School Patrick Francois, University of British Columbia Alberto Galasso, University of Toronto Joshua Gans, University of Toronto Avi Goldfarb, University of Toronto Austan Goolsbee, University of Chicago Booth School of Business Rebecca Henderson, Harvard Business School Ginger Zhe Jin, University of Maryland

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Contains papers which were presented at the 10th anniversary of the
International Conference of the ACIA (CCIA'07) in Sant Julia de Loria (Andorra),
October 25-26th, 2007. This book is intended for those computer scientists or
engineers who are interested in artificial intelligence.

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This book is a collection of 45 accepted papers originally submitted for the 12th International Conference of the Catalan Association for Artificial Intelligence (ACIA). It also includes a brief summary of two papers from invited speakers. The Catalan Association for Artificial Intelligence was founded in 1994 with the aim of fostering cooperation among researchers from the Catalan-speaking AI research community. Collaboration between ACIA members and the wider international AI community has also been well-established now for many years. The papers in these proceedings reflect this collaboration and include contributions not only from the Catalan-speaking regions of Spain, but also from France and Italy, and from as far afield as Mexico and Australia. Of all the fields in computer science, AI is the one most intertwined with all sorts of disciplines dealt with in the human experience, often employing lessons learnt in one discipline to implement a task in another. The papers in this volume reflect the rich diversity in AI, covering areas such as logics, natural language, machine learning, computer vision, robotics and multi-agent systems.

The papers in this volume are the refereed papers presented at AI-2016, the Thirty-sixth SGA I International Conference on Innovative Techniques and Applications of Artificial Intelligence, held in Cambridge in December 2016 in both the technical and the application streams. They present new and innovative

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developments and applications, divided into technical stream sections on Knowledge Discovery and Data Mining, Sentiment Analysis and Recommendation, Machine Learning, AI Techniques, and Natural Language Processing, followed by application stream sections on AI for Medicine and Disability, Legal Liability and Finance, Telecoms and eLearning, and Genetic Algorithms in Action. The volume also includes the text of short papers presented as posters at the conference. This is the thirty-third volume in the Research and Development in Intelligent Systems series, which also incorporates the twenty-fourth volume in the Applications and Innovations in Intelligent Systems series. These series are essential reading for those who wish to keep up to date with developments in this important field.

The papers in this volume are the refereed technical papers presented at AI-2006, the Twenty-sixth SGAI International Conference on Innovative Techniques and Applications of Artificial Intelligence, held in Cambridge in December 2006. They present new and innovative developments in the field. For the first time the volume also includes the text of short papers presented as posters at the conference.

The field covered by Artificial Intelligence (AI) is multiform and gathers subjects as various as the engineering of knowledge, the automatic treatment of the language, the

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training and the systems multiagents, and more. This book focuses on subjects including Machine Learning, Reasoning, Neural Networks, Computer Vision, and Multiagent Systems.

Artificial intelligence (AI) is a transformative technology that holds promise for tremendous societal and economic benefit. AI has the potential to revolutionize how we live, work, learn, discover, and communicate. AI research can further our national priorities, including increased economic prosperity, improved educational opportunities and quality of life, and enhanced national and homeland security. Because of these potential benefits, the U.S. government has invested in AI research for many years. Yet, as with any significant technology in which the Federal government has interest, there are not only tremendous opportunities but also a number of considerations that must be taken into account in guiding the overall direction of Federally-funded R&D in AI. On May 3, 2016, the Administration announced the formation of a new NSTC Subcommittee on Machine Learning and Artificial intelligence, to help coordinate Federal activity in AI.¹ This Subcommittee, on June 15, 2016, directed the Subcommittee on Networking and Information Technology Research and Development (NITRD) to create a National Artificial Intelligence Research and Development Strategic Plan. A NITRD Task Force on Artificial Intelligence was then formed to define the Federal strategic priorities for AI R&D, with particular attention on areas that industry is unlikely to address. This National Artificial Intelligence R&D Strategic Plan establishes a

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set of objectives for Federally-funded AI research, both research occurring within the government as well as Federally-funded research occurring outside of government, such as in academia. The ultimate goal of this research is to produce new AI knowledge and technologies that provide a range of positive benefits to society, while minimizing the negative impacts.

This book constitutes the refereed proceedings of the Third Symposium of the Norwegian AI Society, NAIS 2019, held in Trondheim, Norway, in May, 2019. The 11 full papers and 3 short papers were carefully reviewed and selected from 21 submissions. The papers focus on all aspects of: artificial intelligence; machine learning; knowledge representation; robotics; planning and scheduling; natural language processing; computer vision; search algorithms; multi-agent-systems; industrial applications; and philosophical and ethical foundations.

"We propose that a 2 month, 10 man study of artificial intelligence be carried out during the summer of 1956 at Dartmouth College in Hanover, New Hampshire. The study is to proceed.... Last year the 50th anniversary of the Dartmouth AI project proposal by McCarthy, Minsky, Rochester and Shannon was celebrated. Years later, and following similar traditions of a number of AI associations, a call was launched in 1997 by the Catalan Association for Artificial Intelligence (ACIA) to organize an annual conference to promote synergies in the research community of its influence, the seeder for the 1st Catalan Conference on Artificial Intelligence (CCIA98) which took place in Tarragona

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on October 1998. The editors of this book are very glad to celebrate the 10th anniversary of the International Conference of the ACIA (CCIA07) in Sant Juli de Lria (Andorra), October 2526th, 2007. The good health of the Catalan AI community and its influence area is witnessed by the representative selection of papers gathered in this book and presented at CCIA07. The book is organized according to the different areas in which the papers were distributed for their presentation during the conference, namely: Constraint Satisfaction, Agents, Data Processing, Case-Based Reasoning, Computer Vision, Natural Language Processing, Uncertainty and Fuzziness, Robotics, and Applications. The editors believe that all the papers collected in this volume can be of interest to any computer scientist or engineer interested in AI."

Since it was formed in 1994, the Catalan Association for Artificial Intelligence (ACIA) has been promoting cooperation between researchers in artificial intelligence within the Catalan speaking community. The association now holds an annual conference in the Catalan region, which aims to foster discussion of the latest developments in artificial intelligence within the community of Catalan countries, as well as amongst members of the wider AI community. This book presents the proceedings of the 18th International Conference (CCIA 2015), held in Valencia, Spain, in October 2015. It contains full versions of the peer reviewed papers presented at the conference, as well as shorter poster contributions. In addition to this year's dominant research trends of classification, decision support systems and data mining, many other topics are

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covered, ranging from theoretical aspects to descriptions of real applications. This overview of current work in the Catalan artificial intelligence community and of the collaboration between ACIA members and the AI community worldwide will be of interest to all those working in the field of artificial intelligence.

For almost twenty years the Catalan Association of Artificial Intelligence (ACIA) has been promoting cooperation between researchers in artificial intelligence within the Catalan speaking community. This book presents the proceedings of the 16th International Conference (CCIA 2013), held at the University of Vic (UVIC), Catalonia, Spain, in October 2013. This annual conference aims to foster discussion of the latest developments in artificial intelligence within the community of Catalan countries, as well as amongst members of the AI community worldwide. The book contains the 26 full papers, 5 short papers and 12 poster presentations from the conference, which are grouped under the following topics: relational learning, planning; satisfiability and constraints; perception and image processing; preprocessing; patterns extraction and learning; post-processing, model interpretability and decision support; recommenders, similarity and CBR; and multiagent systems.

It is almost impossible today to find an economic sector or aspect of society which does not involve AI techniques in some way. This pervasive technology has become indispensable in a multitude of ways, from supporting decision making to managing digital devices such as smart sensors, mechanical arms or artificial eyes. The ability of

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AI to emulate intelligence in the resolution of challenging problems has placed it at the centre of problem solving in all areas of our society. This book presents contributions from CCIA 2018, the 21st International Conference of the Catalan Association for Artificial Intelligence which took place in Alt Empordà, Catalonia, Spain, on 8-10th October 2018. The book aims to provide a picture of what is being achieved and what is under development in AI today. As such, its contents represent the diversity of approaches and applications currently being researched, but it also presents invited contributions which deal with some of the challenges that will have to be faced in the decade to come. The contributions included in this book are organized under the following headings: logic, satisfiability and fuzzy sets; classifiers, networks and machine learning; data science, recommender systems and case-based reasoning; natural language and sound processing; cognitive systems and agents; and computer vision and robotics. The book also covers a number of current AI challenges and new trends like big data, spatial problem solving, ethics and AI, and how blockchain impacts AI. Providing an up-to-the-minute overview of current AI technology and research, this book will be of value to all those with an interest in the subject.

This resulting AI R&D Strategic Plan defines a high-level framework that can be used to identify scientific and technological needs in AI, and to track the progress and maximize the impact of R&D investments to fill those needs. It also establishes priorities for Federally-funded R&D in AI, looking beyond near-term AI capabilities toward long-term

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transformational impacts of AI on society and the world. This coordinated AI R&D effort across the Federal government will help the United States capitalize on the full potential of AI technologies to strengthen our economy and better our society. This plan does not, however, define specific research agendas for individual Federal agencies. Instead, agencies will continue to pursue priorities consistent with their missions, capabilities, authorities, and budgets, while coordinating so that the overall research portfolio is consistent with the AI R&D Strategic Plan.

This book presents 34 original papers accepted for presentation at the 17th International Conference of the Catalan Association for Artificial Intelligence (CCIA 2014), held in October 2014 in Barcelona, Spain. The Catalan Association for Artificial Intelligence (ACIA), was created in 1994 as a non-profit association to promote cooperation among researchers from the Catalan-speaking artificial intelligence research community. Conferences are now held annually throughout the Catalan-speaking countries. The papers in this volume have been organized around different topics, providing a representative sample of the current state-of-the-art in the Catalan artificial intelligence community and of the collaboration between ACIA members and the worldwide AI community. The book will be of interest to all those working in the field of artificial intelligence.

Proceedings of the 13th International Conference. Artificial Intelligence AI is one of the hottest areas of research with hundreds of potentially real life applications and one of

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the disciplines that is most intertwined with all sorts of fields related to human experience. BRA wide range of disci"

Artificial intelligence has become an indispensable part of our lives in recent years, affecting all aspects from business and leisure to transport and health care. This book presents the proceedings of the 23rd edition of the International Conference of the Catalan Association for Artificial Intelligence (CCIA), an annual event that serves as a meeting point for researchers in Artificial Intelligence in the area of the Catalan speaking territories and from around the world. The 2021 edition was held online as a virtual conference from 20 - 22 October 2021 due to the COVID-19 pandemic. The book contains 42 long papers and 9 short papers, carefully reviewed and selected. The papers cover all aspects of artificial intelligence and are divided under six section headings: combinatorial problem solving and logics for artificial intelligence; sentiment analysis and tekst analysis; data science and decision support systems; machine learning; computer vision; and explainability and argumentation. Abstracts of the 2 invited talks delivered at the conference by Prof. Patty Kostkova and Prof. João Marques-Silva are also included. Offering a state of the art overview of the subject from a regional perspective, the book will be of interest to all those working in the field of artificial intelligence.

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