

Artificial Intelligence In Agriculture 2001 Aia2001 Workshop On Artificial Intelligence In Agriculture Budapest And Godollo Hungary 6 8 June 2001 Author I Farkas Nov 2001

This book is a multi-disciplinary effort that involves world-wide experts from diverse fields, such as artificial intelligence, human computer interaction, information technology, data mining, statistics, adaptive user interfaces, decision support systems, marketing, and consumer behavior. It comprehensively covers the topic of recommender systems, which provide personalized recommendations of items or services to the new users based on their past behavior. Recommender system methods have been adapted to diverse applications including social networking, movie recommendation, query log mining, news recommendations, and computational advertising. This book synthesizes both fundamental and advanced topics of a research area that has now reached maturity. Recommendations in agricultural or healthcare domains and contexts, the context of a recommendation can be viewed as important side information that affects the recommendation goals. Different types of context such as temporal data, spatial data, social data, tagging data, and trustworthiness are explored. This book illustrates how this technology can support the user in decision-making, planning and purchasing processes in agricultural & healthcare sectors.

The papers in this volume comprise the refereed proceedings of the First International Conference on Computer and Computing Technologies in Agriculture (CCTA 2007), in Wuyishan, China, 2007. This conference is organized by China Agricultural University, Chinese Society of Agricultural Engineering and the Beijing Society for Information Technology in Agriculture. The purpose of this conference is to facilitate the communication and cooperation between institutions and researchers on theories, methods and implementation of computer science and information technology. By researching information technology development and the - sources integration in rural areas in China, an innovative and effective approach is expected to be explored to promote the technology application to the development of modern agriculture and contribute to the construction of new countryside. The rapid development of information technology has induced substantial changes and impact on the development of China's rural areas. Western thoughts have exerted great impact on studies of Chinese information technology development and it helps more Chinese and western scholars to expand their studies in this academic and application area. Thus, this conference, with works by many prominent scholars, has covered computer science and technology and information development in China's rural areas; and probed into all the important issues and the newest research topics, such as Agricultural Decision Support System and Expert System, GIS, GPS, RS and Precision Farming, CT applications in Rural Area, Agricultural System Simulation, Evolutionary Computing, etc.

Agriculture has experienced a dramatic change during the past decades. The change has been structural and technological. Structural changes can be seen in the size of current farms; not long ago, agricultural production was organized around small farms, whereas nowadays the agricultural landscape is dominated by large farms. Large farms have better means of applying new technologies, and therefore technological advances have been a driving force in changing the farming structure. New technologies continue to emerge, and their mastery and use in requires that farmers gather more information and make more complex technological choices. In particular, the advent of the Internet has opened vast opportunities for communication and business opportunities within the agricultural community. But at the same time, it has created another class of complex issues that need to be addressed sooner rather than later. Farmers and agricultural researchers are faced with an overwhelming amount of information they need to analyze and synthesize to successfully manage all the facets of agricultural production. This daunting challenge requires new and complex approaches to farm management. A new type of agricultural management system requires active cooperation among multidisciplinary and multi-institutional teams and refining of existing and creation of new analytical theories with potential use in agriculture. Therefore, new management agricultural systems must combine the newest achievements in many scientific domains such as agronomy, economics, mathematics, and computer science, to name a few.

The aim of the book is to provide latest research findings, innovative research results, methods and development techniques from both theoretical and practical perspectives related to the emerging areas of Web Computing, Intelligent Systems and Internet Computing. As the Web has become a major source of information, techniques and methodologies that extract quality information are of paramount importance for many Web and Internet applications. Data mining and knowledge discovery play key roles in many of today's prominent Web applications such as e-commerce and computer security. Moreover, the outcome of Web services delivers a new platform for enabling service-oriented systems. The emergence of large scale distributed computing paradigms, such as Cloud Computing and Mobile Computing Systems, has opened many opportunities for collaboration services, which are at the core of any Information System. Artificial Intelligence (AI) is an area of computer science that build intelligent systems and algorithms that work and react like humans. The AI techniques and computational intelligence are powerful tools for learning, adaptation, reasoning and planning. They have the potential to become enabling technologies for the future intelligent networks. Recent research in the field of intelligent systems, robotics, neuroscience, artificial intelligence and cognitive sciences are very important for the future development and innovation of Web and Internet applications.

This Proceedings contains the papers presented at the AIA'2001 Workshop on "Artificial Intelligence in Agriculture", held at the Hotel Eben in Budapest and the Campus of the Szent István University Gödöllo, Hungary, on 6-8 June 2001. The papers demonstrate the aim of the workshop, which was to bring together leading researchers and practitioners from academy and industry in order to favour the emergence or consolidation of bridges between AI and its applications in Agriculture and domains connected to it (in particular,

environmental sciences). This Proceedings concentrate on five main topic areas: Fundamentals, Decision tools; Neural networks; Quality and measurements; Fuzzy modelling and control and Modelling and control.

The agricultural sector can benefit immensely from developments in the field of smart farming. However, this research area focuses on providing specific fixes to particular situations and falls short on implementing data-driven frameworks that provide large-scale benefits to the industry as a whole. Using deep learning can bring immense data and improve our understanding of various earth sciences and improve farm services to yield better crop production and profit.

Smart Agricultural Services Using Deep Learning, Big Data, and IoT is an essential publication that focuses on the application of deep learning to agriculture. While highlighting a broad range of topics including crop models, cybersecurity, and sustainable agriculture, this book is ideally designed for engineers, programmers, software developers, agriculturalists, farmers, policymakers, researchers, academicians, and students.

Artificial Intelligence is one of the oldest and most exciting subfields of computing, covering such areas as intelligent robotics, intelligent planning and scheduling, model-based reasoning, fault diagnosis, natural language processing, machine translation, knowledge representation and reasoning, knowledge-based systems, knowledge engineering, intelligent agents, machine learning, neural nets, genetic algorithms and knowledge management. The papers in this volume comprise the refereed proceedings of the Second International Conference on Artificial Intelligence Applications and Innovations, held in Beijing, China in 2005. A very promising sign of the growing importance of Artificial Intelligence techniques in practical applications is the large number of submissions received for the conference - more than 150. All papers were reviewed by at least two members of the Program Committee and the best 93 were selected for the conference and are included in this volume. The international nature of IFIP is amply reflected in the large number of countries represented here.

While a good grasp of the many separate aspects of agriculture is important, it is equally essential for all those involved in agriculture to understand the functioning of the farming system as a whole and how it can be best managed. It is necessary to re-assess and understand rain-fed farming systems around the world and to find ways to improve the selection, design and operation of such systems for long term productivity, profitability and sustainability. The components of the system must operate together efficiently; yet many of the relationships and interactions are not clearly understood. Appreciation of these matters and how they are affected by external influences or inputs are important for decision making and for achieving desirable outcomes for the farm as a whole. This book analyses common rain-fed farming systems and defines the principles and practices important to their effective functioning and management.

Cities are the next frontier for artificial intelligence to permeate. As smart urban environments become possible, probable, and even preferred, artificial intelligence offers the chance for even further advancement through infrastructure and industry boosting. Opportunity overflows, but without thorough research to guide a complicated development and implementation process, urban environments can become disorganized and outright dangerous for citizens. *AI-Based Services for Smart Cities and Urban Infrastructure* is a collection of innovative research that explores artificial intelligence (AI) applications in urban planning. In addition, the book looks at how the internet of things and AI can work together to enable a real smart city and discusses state-of-the-art techniques in urban infrastructure design, construction, operation, maintenance, and management. While highlighting a broad range of topics including construction management, public transportation, and smart agriculture, this book is ideally designed for engineers, entrepreneurs, urban planners, architects, policymakers, researchers, academicians, and students.

This book aims at offering a unique collection of ideas and experiences mainly focusing on the main streams and merger of Artificial Intelligence (AI) and the Internet of Things (IoT) for a wide slice of the communication and networking community. In the era when the world is grappling with many unforeseen challenges, scientists and researchers are envisioning smart cyber systems that guarantee sustainable development for a better human life. The main contributors that destined to play a huge role in developing such systems, among others, are AI and IoT. While AI provides intelligence to machines and data by identifying patterns, developing predictions, and detecting anomalies, IoT performs as a nerve system by connecting a huge number of machines and capturing an enormous amount of data. AI-enabled IoT, therefore, redefines the way industries, businesses, and economies function with increased automation and efficiency and reduced human interaction and costs. This book is an attempt to publish innovative ideas, emerging trends, implementation experience, and use-cases pertaining to the merger of AI and IoT. The primary market of this book is centered around students, researchers, academicians, industrialists, entrepreneurs, and professionals working in electrical/computer engineering, IT, telecom/electronic engineering, and related fields. The secondary market of this book is related to individuals working in the fields such as finance, management, mathematics, physics, environment, mechatronics, and the automation industry.

There has been a movement over the years to make machines intelligent. With the advent of modern technology, AI has become the core part of day-to-day life. But it is accentuated to have a book that keeps abreast of all the state-of-the-art concepts (pertaining to AI) in simplified, explicit and elegant way, expounding on ample examples so that the beginners are able to comprehend the subject with ease. The book on Artificial Intelligence, dexterously divided into 21 chapters, fully satisfies all these pressing needs. It is intended to put each and every concept related to intelligent system in front of the readers in the most simplified way so that while understanding the basic concepts, they will develop thought process that can contribute to the building of advanced intelligent systems. Various cardinal landmarks pertaining to the subject such as problem solving, search techniques, intelligent agents, constraint satisfaction problems,

knowledge representation, planning, machine learning, natural language processing, pattern recognition, game playing, hybrid and fuzzy systems, neural network-based learning and future work and trends in AI are now under the single umbrella of this book, thereby showing a nice blend of theoretical and practical aspects. With all the latest information incorporated and several pedagogical attributes included, this textbook is an invaluable learning tool for the undergraduate and postgraduate students of computer science and engineering, and information technology. KEY FEATURES • Highlights a clear and concise presentation through adequate study material • Follows a systematic approach to explicate fundamentals as well as recent advances in the area • Presents ample relevant problems in the form of multiple choice questions, concept review questions, critical thinking exercise and project work • Incorporates various case studies for major topics as well as numerous industrial examples

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The first book in this rapidly expanding area, Computer Vision Technology for Food Quality Evaluation thoroughly discusses the latest advances in image processing and analysis. Computer vision has attracted much research and development attention in recent years and, as a result, significant scientific and technological advances have been made in quality inspection, classification and evaluation of a wide range of food and agricultural products. This unique work provides engineers and technologists working in research, development, and operations in the food industry with critical, comprehensive and readily accessible information on the art and science of computer vision technology. Undergraduate and postgraduate students and researchers in universities and research institutions will also find this an essential reference source. • Discusses novel technology for recognizing objects and extracting quantitative information from digital images in order to provide objective, rapid, non-contact and non-destructive quality evaluation. • International authors with both academic and professional credentials address in detail one aspect of the relevant technology per chapter making this ideal for textbook use • Divided into three parts, it begins with an outline of the fundamentals of the technology, followed by full coverage of the application in the most researched areas of meats and other foods, fruits, vegetables and grains.

Data Mining in Agriculture represents a comprehensive effort to provide graduate students and researchers with an analytical text on data mining techniques applied to agriculture and environmental related fields. This book presents both theoretical and practical insights with a focus on presenting the context of each data mining technique rather intuitively with ample concrete examples represented graphically and with algorithms written in MATLAB®.

Ongoing advancements in modern technology have led to significant developments in artificial intelligence. With the numerous applications available, it becomes imperative to conduct research and make further progress in this field. Artificial Intelligence: Concepts, Methodologies, Tools, and Applications provides a comprehensive overview of the latest breakthroughs and recent progress in artificial intelligence. Highlighting relevant technologies, uses, and techniques across various industries and settings, this publication is a pivotal reference source for researchers, professionals, academics, upper-level students, and practitioners interested in emerging perspectives in the field of artificial intelligence.

This book constitutes the refereed proceedings of the 10th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2014, held in Rhodes, Greece, in September 2014. The 33 revised full papers and 29 short papers presented were carefully reviewed and selected from numerous submissions. They are organized in the following topical sections: learning-ensemble learning; social media and mobile applications of AI; hybrid-changing environments; agent (AGE); classification pattern recognition; genetic algorithms; image and video processing; feature extraction; environmental AI; simulations and fuzzy modeling; and data mining forecasting.

Intelligent Data Mining and Fusion Systems in Agriculture presents methods of computational intelligence and data fusion that have applications in agriculture for the non-destructive testing of agricultural products and crop condition monitoring. Sections cover the combination of sensors with artificial intelligence architectures in precision agriculture, including algorithms, bio-inspired hierarchical neural maps, and novelty detection algorithms capable of detecting sudden changes in different conditions. This book offers advanced students and entry-level professionals in agricultural science and engineering, geography and geoinformation science an in-depth overview of the connection between decision-making in agricultural operations and the decision support features offered by advanced computational intelligence algorithms. Covers crop protection, automation in agriculture, artificial intelligence in agriculture, sensing and Internet of Things (IoT) in agriculture Addresses AI use in weed management, disease detection, yield prediction and crop production Utilizes case studies to provide real-world insights and direction

This book arises from a 2011 international conference entitled Climate Change, Agri-Food, Fisheries and Ecosystems: Reinventing Research, Innovation, and Policy Agendas for an Environmentally and Socially-Balanced Growth (ICCAFFE2011), organized by the North-South Center for Social Sciences (NRCS) in collaboration with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Germany and the Institute for Research and Development (IRD), France. Coverage focuses on the agricultural sector and helps improve understanding of the relationships between agriculture and the environment and between human communities and nature, so as to sustainably manage agricultural development. The contributors analyze the interdependence between sustainable agricultural development and environmental, economic and social dynamics; assess the impacts of soil degradation on agricultural productivity; present ways to enhance livestock production and recommend mechanisms for managing links between agro-biodiversity, climate change and livelihoods. Part I examines sustainable agriculture development and environmental, economic and social dynamics, addressing topics such as global climate change, agriculture and challenges including socio-economic factors, adaptation, poverty reduction and water management. Part II covers the impacts of soil degradation on agricultural productivity and discusses the use of expert systems to assess and manage degraded lands, agricultural productivity, land suitability and rehabilitation. Part III focuses on livestock production enhancements, such as feed resources and supplemental feeds for animals and capacity building for women in dairy management. Part IV shares the outcomes of research in agro-biodiversity, climate change and livelihoods, addressing topics such as co-management of forests, carbon consumption models, biodiversity conservation and carbon sequestration and scarce mangrove forests. Current environmental and agro-ecological research focuses on understanding the cause-consequence relationships between specific agricultural practices and land use and the responses at different levels of ecosystems. This book is intended to contribute to this discussion.

With the ability to reach many farmers with timely and accessible content, the use of information and communication technologies (ICTs) for agriculture (ICT4Ag) has the potential to transform farming and food production, worldwide. ICT4Ag supports new methods in the monitoring and management of soils, plants and livestock (precision agriculture), access to online markets, and improved communication between value chain stakeholders, among others. The services provided are vital in connecting farmers with the information they need to improve their agricultural productivity and reduce poverty. Through case studies and examples of ICT4Ag initiatives from across Asia, the Caribbean and sub-Saharan Africa, the first chapter looks at how ICT4Ag actually works to drive economic development across

developing economies.

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Issues in Artificial Intelligence, Robotics and Machine Learning: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Artificial Intelligence, Robotics and Machine Learning. The editors have built Issues in Artificial Intelligence, Robotics and Machine Learning: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Artificial Intelligence, Robotics and Machine Learning in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Artificial Intelligence, Robotics and Machine Learning: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

The chapters of the book are evolved from presentations made by selected participants at the 2005 BISC International Special Event, held at the University of California at Berkeley. The papers include reports from the different front of soft computing in various industries and address the problems of different fields of research in fuzzy logic, fuzzy set and soft computing. The book provides a collection of forty-four articles in two volumes.

This book constitutes the thoroughly refereed proceedings of the 32nd International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems, IEA/AIE 2019, held in Graz, Austria, in July 2019. The 41 full papers and 32 short papers presented were carefully reviewed and selected from 151 submissions. The IEA/AIE 2019 conference will continue the tradition of emphasizing on applications of applied intelligent systems to solve real-life problems in all areas. These areas include engineering, science, industry, automation and robotics, business and finance, medicine and biomedicine, bioinformatics, cyberspace, and human-machine interactions. IEA/AIE 2019 will have a special focus on automated driving and autonomous systems and also contributions dealing with such systems or their verification and validation as well.

This volume constitutes the proceedings of the Third International Workshop on Hybrid Artificial Intelligence Systems, HAIS 2008, held in Burgos, Spain, during September 24-26, 2008. The 93 papers presented, together with 4 invited talks, were carefully reviewed and selected from 280 submissions. The topics covered are agents and multi-agent systems; evolutionary computation; connectionist models; optimization systems; fuzzy logic systems; classification and classifiers; cluster analysis; video and image analysis; learning systems, algorithms and applications; hybrid systems based on negotiation and social network modelling; real world applications of HAIS under uncertainty; hybrid intelligent systems for multi-robot and multi-agent systems; applications of hybrid artificial intelligence in bioinformatics; and novel approaches to genetic fuzzy systems.

The papers in this volume comprise the refereed proceedings of the the First International Conference on Computer and Computing Technologies in Agriculture (CCTA 2007), in Wuyishan, China, 2007. This conference is organized by China Agricultural University, Chinese Society of Agricultural Engineering and the Beijing Society for Information Technology in Agriculture. The purpose of this conference is to facilitate the communication and cooperation between institutions and researchers on theories, methods and implementation of computer science and information technology. By researching information technology development and the - sources integration in rural areas in China, an innovative and effective approach is expected to be explored to promote the technology application to the development of modern agriculture and contribute to the construction of new countryside. The rapid development of information technology has induced substantial changes and impact on the development of China's rural areas. Western thoughts have exerted great impact on studies of Chinese information technology development and it helps more Chinese and western scholars to expand their studies in this academic and application area. Thus, this conference, with works by many prominent scholars, has covered computer science and technology and information development in China's rural areas; and probed into all the important issues and the newest research topics, such as Agricultural Decision Support System and Expert System, GIS, GPS, RS and Precision Farming, CT applications in Rural Area, Agricultural System Simulation, Evolutionary Computing, etc.

Agricultural automation is the core technology for computer-aided agricultural production management and implementation. An integration of equipment, infotronics, and precision farming technologies, it creates viable solutions for challenges facing the food, fiber, feed, and fuel needs of the human race now and into the future. Agricultural Automat

This book constitutes the refereed proceedings of the 11th International Conference on Artificial Intelligence: Methodology, Systems, and Applications, AIMS 2004, held in Varna, Bulgaria in September 2004. The 52 revised full papers presented were carefully reviewed and selected from 176 submissions. The papers are organized in topical sections on ontology engineering, semantic Web services, knowledge representation and processing, machine learning and data mining, natural language processing, soft computing, neural networks, e-learning systems, multiagent systems, pattern recognition, intelligent decision making, and information retrieval.

In two volumes, this new edition presents the state of the art in Multiple Criteria Decision Analysis (MCDA). Reflecting the explosive growth in the field seen during the last several years, the editors not only present surveys of the foundations of MCDA, but look as well at many new areas and new applications. Individual chapter authors are among the most prestigious names in MCDA research, and combined their chapters bring the field completely up to date. Part I of the book considers the history and current state of MCDA, with surveys that cover the early history of MCDA and an overview that discusses the "pre-theoretical" assumptions of MCDA. Part II then presents the foundations of MCDA, with individual chapters that provide a very exhaustive review of preference modeling, along with a chapter devoted to the axiomatic basis of the different models that multiple criteria preferences. Part III looks at outranking methods, with three chapters that consider the ELECTRE methods, PROMETHEE methods, and a look at the rich literature of other outranking methods. Part IV, on Multiattribute Utility and Value Theories (MAUT), presents chapters on the fundamentals of this approach, the very well known UTA methods, the Analytic Hierarchy Process (AHP) and its more recent extension, the Analytic Network Process (ANP), as well as a chapter on MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique). Part V looks at Non-Classical MCDA Approaches, with chapters on risk and uncertainty in MCDA, the decision rule approach to MCDA, the fuzzy integral approach, the verbal decision methods,

and a tentative assessment of the role of fuzzy sets in decision analysis. Part VI, on Multiobjective Optimization, contains chapters on recent developments of vector and set optimization, the state of the art in continuous multiobjective programming, multiobjective combinatorial optimization, fuzzy multicriteria optimization, a review of the field of goal programming, interactive methods for solving multiobjective optimization problems, and relationships between MCDA and evolutionary multiobjective optimization (EMO). Part VII, on Applications, selects some of the most significant areas, including contributions of MCDA in finance, energy planning problems, telecommunication network planning and design, sustainable development, and portfolio analysis. Finally, Part VIII, on MCDM software, presents well known MCDA software packages.

As technology continues to saturate modern society, agriculture has started to adopt digital computing and data-driven innovations. This emergence of “smart” farming has led to various advancements in the field, including autonomous equipment and the collection of climate, livestock, and plant data. As connectivity and data management continue to revolutionize the farming industry, empirical research is a necessity for understanding these technological developments. Artificial Intelligence and IoT-Based Technologies for Sustainable Farming and Smart Agriculture provides emerging research exploring the theoretical and practical aspects of critical technological solutions within the farming industry. Featuring coverage on a broad range of topics such as crop monitoring, precision livestock farming, and agronomic data processing, this book is ideally designed for farmers, agriculturalists, product managers, farm holders, manufacturers, equipment suppliers, industrialists, governmental professionals, researchers, academicians, and students seeking current research on technological applications within agriculture and farming.

Third edition of International Conference on Intelligent Computing and Optimization and as a premium fruit, this book, pursue to gather research leaders, experts and scientists on Intelligent Computing and Optimization to share knowledge, experience and current research achievements. Conference and book provide a unique opportunity for the global community to interact and share novel research results, explorations and innovations among colleagues and friends. This book is published by SPRINGER, Advances in Intelligent Systems and Computing. Ca. 100 authors submitted full papers to ICO'2020. That global representation demonstrates the growing interest of the research community here. The book covers innovative and creative research on sustainability, smart cities, meta-heuristics optimization, cyber-security, block chain, big data analytics, IoTs, renewable energy, artificial intelligence, Industry 4.0, modeling and simulation. We editors thank all authors and reviewers for their important service. Best high-quality papers have been selected by the International PC for our premium series with SPRINGER. .

This book constitutes the thoroughly refereed conference proceedings of the 7th International Conference on Multi-disciplinary Trends in Artificial Intelligence, MIWAI 2013, held in Krabi, Thailand, in December 2013. The 30 full papers were carefully reviewed and selected from 65 submissions and cover topics such as cognitive science, computational intelligence, computational philosophy, game theory, machine learning, multi-agent systems, natural language, representation and reasoning, speech, vision and the web.

This volume collects the papers selected for presentation at the IX Congress of the Italian Association for Artificial Intelligence (AI*IA), held in Milan at the University of Milano–Bicocca (September 21–23, 2005). On the one hand this congress continues the tradition of AI*IA in organizing its biannual scientific meeting from 1989; on the other hand, this edition is a landmark in the involvement of the international community of artificial intelligence (AI), directly involving a broad number of experts from several countries in the Program Committee. Moreover, the peculiar nature of scientific research in artificial intelligence (which is intrinsically international) and several consolidated international collaborations in projects and mobility programs allowed the collection and selection of papers from many different countries, all around the world, enlarging the visibility of the Italian contribution within this research field. Artificial intelligence is today a growing complex set of conceptual, theoretical, methodological, and technological frameworks, offering innovative computational solutions in the design and development of computer-based systems. Within this perspective, researchers working in this area must tackle a broad range of knowledge about methods, results, and solutions coming from different classical areas of this discipline. The congress was designed as a forum allowing researchers to present and discuss specialized results as general contributions to AI growth.

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