Fuzzy Pid Control Via Genetic Algorithm Based Settings For

The International Conference on Intelligent Computing (ICIC) was formed to p-vide an annual forum dedicated to the emerging and challenging topics in artificial intelligence, machine learning, bioinformatics, and computational biology, etc. It aims to bring together researchers and practitioners from both academia and ind- try to share ideas, problems and solutions related to the multifaceted aspects of intelligent computing. ICIC 2008, held in Shanghai, China, September 15–18, 2008, constituted the 4th International Conference on Intelligent Computing. It built upon the success of ICIC 2007, ICIC 2006 and ICIC 2005 held in Qingdao, Kunming and Hefei, China, 2007, 2006 and 2005, respectively. This year, the conference concentrated mainly on the theories and methodologies as well as the emerging applications of intelligent computing. Its aim was to unify the picture of contemporary intelligent computing techniques as an integral concept that highlights the trends in advanced computational intelligence and bridges theoretical research with applications. Therefore, the theme for this conference was "Emerging Intelligent Computing Technology and Applications". Papers focusing on this theme were solicited, addressing theories, methodologies, and applications in science and technology.

Automation Engineering (MDMAE2014) is to provide a platform for all researchers in the field of Mechanical, Manufacture, Automation and Material Engineering to share the most advanced knowledge from both academic and industrial world, and to communicate with each other about their experiences and the most up-to-date research achievements, discussing forward issues and future prospects, seeking a better way to solve practical problems in this fields. As the first international conference on MDMAE, consisting of five main topics: Mechanical Engineering, Automation Engineering, Manufacturing Systems, Materials Engineering and Measurement and Test, which offer attendees free space to present their inspiring works and academic achievements mixed with the atmosphere of industry and academia, it has attracted many scholars, researchers and practitioners in these fields from various countries to get together in this conference, sharing their latest research achievements with each other , enriching their professional knowledge and broadening their horizons as well.

The effectiveness of proportional-integral-derivative (PID) controllers for a large class of process systems has ensured their continued and widespread use in industry. Similarly there has been a continued interest from academia in devising new ways of approaching the PID tuning problem. To the industrial engineer and many control academics this work has previously appeared fragmented; but a key determinant of this literature is the type of process model information used in the PID tuning methods. PID Control presents a set of coordinated contributions illustrating methods, old and new, that cover the range of process model

assumptions systematically. After a review of PID technology, these contributions begin with model-free methods, progress through non-parametric model methods (relay experiment and phase-locked-loop procedures), visit fuzzy-logic- and genetic-algorithm-based methods; introduce a novel subspace identification method before closing with an interesting set of parametric model techniques including a chapter on predictive PID controllers. Highlights of PID Control include: an introduction to PID control technology features and typical industrial implementations; chapter contributions ordered by the increasing quality of the model information used; novel PID control concepts for multivariable processes. PID Control will be useful to industry-based engineers wanting a better understanding of what is involved in the steps to a new generation of PID controller techniques. Academics wishing to have a broader perspective of PID control research and development will find useful pedagogical material and research ideas in this text.

Measuring Technology and Mechatronics Automation in Electrical Engineering includes select presentations on measuring technology and mechatronics automation related to electrical engineering, originally presented during the International Conference on Measuring Technology and Mechanatronics Automation (ICMTMA2012). This Fourth ICMTMA, held at Sanya, China, offered a prestigious, international forum for scientists, engineers, and educators to present the state of the art of measuring technology and mechatronics automation research.

Control systems play an important role in engineering. Fuzzy logic is the natural choice for designing control applications and is the most popular and appropriate for the control of home and industrial appliances. Academic and industrial experts are constantly researching and proposing innovative and effective fuzzy control systems. This book is an edited volume and has 21 innovative chapters arranged into five sections covering applications of fuzzy control systems in energy and power systems, navigation systems, imaging, and industrial engineering. Overall, this book provides a rich set of modern fuzzy control systems and their applications and will be a useful resource for the graduate students, researchers, and practicing engineers in the field of electrical engineering.

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.

Soft Computing in Green and Renewable Energy Systems provides a practical

introduction to the application of soft computing techniques and hybrid intelligent systems for designing, modeling, characterizing, optimizing, forecasting, and performance prediction of green and renewable energy systems. Research is proceeding at jet speed on renewable energy (energy derived from natural resources such as sunlight, wind, tides, rain, geothermal heat, biomass, hydrogen, etc.) as policy makers, researchers, economists, and world agencies have joined forces in finding alternative sustainable energy solutions to current critical environmental, economic, and social issues. The innovative models, environmentally benign processes, data analytics, etc. employed in renewable energy systems are computationally-intensive, non-linear and complex as well as involve a high degree of uncertainty. Soft computing technologies, such as fuzzy sets and systems, neural science and systems, evolutionary algorithms and genetic programming, and machine learning, are ideal in handling the noise, imprecision, and uncertainty in the data, and yet achieve robust, low-cost solutions. As a result, intelligent and soft computing paradigms are finding increasing applications in the study of renewable energy systems. Researchers, practitioners, undergraduate and graduate students engaged in the study of renewable energy systems will find this book very useful.

This volume contains the papers presented at INDIA-2012: International conference on Information system Design and Intelligent Applications held on January 5-7, 2012 in Vishakhapatnam, India. This conference was organized by Computer Society of India (CSI), Vishakhapatnam chapter well supported by Vishakhapatnam Steel, RINL, Govt of India. It contains 108 papers contributed by authors from six different countries across four continents. These research papers mainly focused on intelligent applications and various system design issues. The papers cover a wide range of topics of computer science and information technology discipline ranging from image processing, data base application, data mining, grid and cloud computing, bioinformatics among many others. The various intelligent tools like swarm intelligence, artificial intelligence, evolutionary algorithms, bio-inspired algorithms have been applied in different papers for solving various challenging IT related problems.

This book reports on the latest developments in sliding mode overhead crane control, presenting novel research ideas and findings on sliding mode control (SMC), hierarchical SMC and compensator design-based hierarchical sliding mode. The results, which were previously scattered across various journals and conference proceedings, are now presented in a systematic and unified form. The book will be of interest to researchers, engineers and graduate students in control engineering and mechanical engineering who want to learn the methods and applications of SMC.

Soft computing has been presented not only with the theoretical developments but also with a large variety of realistic applications to consumer products and industrial systems. Application of soft computing has provided the opportunity to integrate human-like vagueness and real-life uncertainty into an otherwise hard computer program. This book highlights some of the recent developments in practical applications of soft computing in engineering problems. All the chapters have been sophisticatedly designed and revised by international experts to achieve wide but in-depth coverage. Contents: Automatic Detection of Microcalcifications in Mammograms Using a Fuzzy

Classifier (A P Drijarkara et al.); Predictive Fuzzy Model for Control of an Artificial Muscle (P B Petrovi(); Evolutionary Computation for Information Retrieval Based on User Preference (H-G Kim & S-B Cho); Fuzzy Logic and Neural Networks Approach OCo A Way to Improve Overall Performance of Integrated Heating Systems (E Entchev); Design and Tuning a Neurofuzzy Power System Stabilizer Using Genetic Algorithms (A Afzalian & D A Linkens); An Application of Logic Programs with Soft Computing Aspects to Fault Diagnosis in Digital Circuits (H Sakai et al.); Determination of the Motion Parameters from the Perspective Projection of a Triangle (M M Sein & H Hama); and other papers. Readership: Graduate students, industrial researchers and academics in fuzzy logic, software engineering, neural networks and artificial intelligence."

This book constitutes the refereed proceedings of the artificial intelligence in intelligent systems section of the 10th Computer Science Online Conference 2021 (CSOC 2021), held online in April 2021. Artificial intelligence in intelligent systems topics are presented in this book. Modern hybrid and bio-inspired algorithms and their application are discussed in selected papers.

The book introduces anti-sway control approaches for double-pendulum overhead cranes, including control methods, theoretical analyses, simulation results and source codes of each control design. All methods are analyzed and verified by MATLAB. Passivity-based, sliding-mode-based and Fuzzy-logic-based control methods are massively discussed. This book is suitable for both academic researchers and industrial R&D engineers.

This book constitutes the refereed proceedings of the 5th International Conference on Information Processing, ICIP 2011, held in Bangalore, India, in August 2011. The 86 revised full papers presented were carefully reviewed and selected from 514 submissions. The papers are organized in topical sections on data mining; Web mining; artificial intelligence; soft computing; software engineering; computer communication networks; wireless networks; distributed systems and storage networks; signal processing; image processing and pattern recognition.

For decades, optimization methods such as Fuzzy Logic, Artificial Neural Networks, Firefly, Simulated annealing, and Tabu search, have been capable of handling and tackling a wide range of real-world application problems in society and nature. Analysts have turned to these problem-solving techniques in the event during natural disasters and chaotic systems research. The Handbook of Research on Artificial Intelligence Techniques and Algorithms highlights the cutting edge developments in this promising research area. This premier reference work applies Meta-heuristics Optimization (MO) Techniques to real world problems in a variety of fields including business, logistics, computer science, engineering, and government. This work is particularly relevant to researchers, scientists, decision-makers, managers, and practitioners.

Power electronics, which is a rapidly growing area in terms of research and applications, uses modern electronics technology to convert electric power from one form to another, such as ac-dc, dc-dc, dc-ac, and ac-ac with a variable output magnitude and frequency. It has many applications in our every day life such as air-conditioners, electric cars, sub-way trains, motor drives, renewable energy sources and power supplies for computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical

methods and some examples of their applications. Designed to appeal to a new generation of engineering professionals, Power Electronics Handbook, 3rd Edition features four new chapters covering renewable energy, energy transmission, energy storage, as well as an introduction to Distributed and Cogeneration (DCG) technology, including gas turbines, gensets, microturbines, wind turbines, variable speed generators, photovoltaics and fuel cells, has been gaining momentum for quite some time now.smart grid technology. With this book readers should be able to provide technical design leadership on assigned power electronics design projects and lead the design from the concept to production involving significant scope and complexity. Contains 45 chapters covering all aspects of power electronics and its applications Three new chapters now including coverage Energy Sources, Energy Storage and Electric Power Transmission Contributions from more than fifty leading experts spanning twelve different countries

The three-volume set CCIS 761, CCIS 762, and CCIS 763 constitutes the thoroughly refereed proceedings of the International Conference on Life System Modeling and Simulation, LSMS 2017, and of the International Conference on Intelligent Computing for Sustainable Energy and Environment, ICSEE 2017, held in Nanjing, China, in September 2017. The 208 revised full papers presented were carefully reviewed and selected from over 625 submissions. The papers of this volume are organized in topical sections on: Biomedical Signal Processing; Computational Methods in Organism Modeling; Medical Apparatus and Clinical Applications; Bionics Control Methods, Algorithms and Apparatus; Modeling and Simulation of Life Systems; Data Driven Analysis; Image and Video Processing; Advanced Fuzzy and Neural Network Theory and Algorithms; Advanced Evolutionary Methods and Applications; Advanced Machine Learning Methods and Applications; Intelligent Modeling, Monitoring, and Control of Complex Nonlinear Systems; Advanced Methods for Networked Systems; Control and Analysis of Transportation Systems; Advanced Sliding Mode Control and Applications; Advanced Analysis of New Materials and Devices; Computational Intelligence in Utilization of Clean and Renewable Energy Resources; Intelligent Methods for Energy Saving and Pollution Reduction; Intelligent Methods in Developing Electric Vehicles, Engines and Equipment; Intelligent Computing and Control in Power Systems; Modeling, Simulation and Control in Smart Grid and Microgrid; Optimization Methods; Computational Methods for Sustainable Environment.

This book presents a methodology for the design of a variable structured fuzzy like PID controller using a hybridization of fuzzy computing and evolutionary computing for optimum control system. The PID like fuzzy controller will have a consequent action for the rules output designed in a variable structured manner. The selection is controlled by a switching vectors working on the rule consequent of a PD and PI realization to get the optimum combination with respect to the integral squared error criterion. Also, the structure of the fuzzy controller is kept

as simple as possible. That is, having the less number of membership functions defined for the input and output variables, with the simplest shape of membership functions, and the simplest form of distribution along their universe of discourse, in addition to input and output scaling factors. Optimization is carried out using the binary genetic algorithm as an efficient evolutionary computing technique. Changing the structure on the bases of the rule consequent at the rule base in accordance to the best PID combination led to the possibility of designing simple structure fuzzy controllers capable to provide optimum control strat

This book constitutes the refereed proceedings of the 14th RoboWorld Cup and Congress of the Federation of International Robosoccer Association, FIRA 2011, held in Kaohsiung, Taiwan in August 2011. The 34 revised papers presented were carefully reviewed and selected for inclusion in the proceedings out of a total of 110 contributed papers presented at FIRA 2011. The papers address a broad variety of current topics in robotics research, particularly in robot soccer. The present edited volume is of special importance, and for various reasons. First of all, it is one of the most comprehensive and multifaceted coverage of broadly per ceived fuzzy control in the literature. The editors have succeeded to collect papers from leading scholars and researchers on various subjects related to the topic of the volume. What is relevant and original is that - as opposed to so many volumes on fuzzy control published by virtually all major publishing houses that are strongly technically oriented and covering a narrow spectrum of issues relevant to fuzzy con trol itself - the editors have adopted a more general and far sighted approach. Basically, the perspective assumed in the volume is that though fuzzy control has reached such a level of maturity and implementability that it has become a part of in dustrial practice, science and academic research still have a relevant role to play in this area. One should however take into account that by their very nature, the role of science and academic research is very peculiar and going beyond straightforward ap plications, ad hoc solutions, "quick and dirty" tools and techniques, etc. that are usu ally effective and efficient for solving practical problems. This does not mean that as pects of practical implementations should not be accounted for by scholars and re searchers.

The Springer Handbook for Computational Intelligence is the first book covering the basics, the state-of-the-art and important applications of the dynamic and rapidly expanding discipline of computational intelligence. This comprehensive handbook makes readers familiar with a broad spectrum of approaches to solve various problems in science and technology. Possible approaches include, for example, those being inspired by biology, living organisms and animate systems. Content is organized in seven parts: foundations; fuzzy logic; rough sets; evolutionary computation; neural networks; swarm intelligence and hybrid computational intelligence systems. Each Part is supervised by its own Part Editor(s) so that high-quality content as well as completeness are assured. This book constitutes the proceedings of the International Conference on Information and Communication Technologies held in Kochi, Kerala, India in

September 2010.

As of today, Evolutionary Computing and Fuzzy Set Computing are two mature, wen -developed, and higbly advanced technologies of information processing. Bach of them has its own clearly defined research agenda, specific goals to be achieved, and a wen setUed algorithmic environment. Concisely speaking, Evolutionary Computing (EC) is aimed at a coherent population -oriented methodology of structural and parametric optimization of a diversity of systems. In addition to this broad spectrum of such optimization applications, this paradigm otTers an important ability to cope with realistic goals and design objectives reflected in the form of relevant fitness functions. The GA search (which is often regarded as a dominant domain among other techniques of EC such as evolutionary strategies, genetic programming or evolutionary programming) delivers a great deal of efficiency helping navigate through large search spaces. The main thrust of fuzzy sets is in representing and managing nonnumeric (linguistic) information. The key notion (whose conceptual as weH as algorithmic importance has started to increase in the recent years) is that of information granularity. It somewhat concurs with the principle of incompatibility coined by L. A. Zadeh. Fuzzy sets form a vehic1e helpful in expressing a granular character of information to be captured. Once quantified via fuzzy sets or fuzzy relations, the domain knowledge could be used efficiently very often reducing a heavy computation burden when analyzing and optimizing complex systems. This two-volume book presents the outcomes of the 8th International Conference on Soft Computing for Problem Solving, SocProS 2018. This conference was a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), and Vellore Institute of Technology (India), and brought together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book highlights the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers on algorithms (artificial immune systems, artificial neural networks, genetic algorithms, genetic programming, and particle swarm optimization) and applications (control systems, data mining and clustering, finance, weather forecasting, game theory, business and forecasting applications). It offers a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems that are difficult to solve using traditional methods. Fractional order calculus is finding increasing interest in the control system community. Hardware realizations of fractional order controllers have sparked off a renewed zeal into the investigations of control system design in the light of fractional calculus. As such many notions of integer order LTI systems are being modified and extended to incorporate these new concepts. Computational Intelligence (CI) techniques have been applied to engineering problems to find solutions to many hitherto intractable conundrums and is a useful tool for dealing with problems of higher computational complexity. This book borders on the interface between CI techniques and fractional calculus, and looks at ways in which fractional order control systems may be designed or enhanced using CI based paradigms. To the best of the author's knowledge this is the first book of its kind exclusively dedicated to the application of computational intelligence techniques in fractional order systems and control. The book tries to assimilate various existing concepts in this nascent field of fractional order intelligent control and is aimed at researchers and post graduate students working in this field.

Intelligent system is an advanced machine that can perceive, learn, and solve the problems with a great accuracy. Technologies with intelligent system are currently available in the market and used in real-world applications, i.e., self-driving cars, Siri, Alexa, Facebook, and so on. To exceed human cognitive capabilities, the important keys rely on the development of sensors and algorithms. Therefore, the insight into artificial intelligence (AI) methods becomes a fundamental building block for design and construction of intelligent system with particular applications. This book aims to describe the AI systems ranging from the basic knowledge, i.e.,

algorithm and mathematical models of AI techniques, fundamentals of machine learning, genetic algorithm, and fuzzy logic, to the current state-of-the-art applications, such as smart road and biomedical applications.

This book and its sister volumes constitute the proceedings of the 2nd International Symposium on Neural Networks (ISNN 2005). ISNN 2005 was held in the beautiful mountain city Chongqing by the upper Yangtze River in southwestern China during May 30–June 1, 2005, as a sequel of ISNN 2004 successfully held in Dalian, China.

This book gathers the refereed proceedings of the Artificial Intelligence and Bioinspired Computational Methods Section of the 9th Computer Science On-line Conference 2020 (CSOC 2020), held on-line in April 2020. Artificial intelligence and bioinspired computational methods now represent crucial areas of computer science research. The topics presented here reflect the current discussion on cutting-edge hybrid and bioinspired algorithms and their applications.

This is a comprehensive overview of the basics of fuzzy control, which also brings together some recent research results in soft computing, in particular fuzzy logic using genetic algorithms and neural networks. This book offers researchers not only a solid background but also a snapshot of the current state of the art in this field.

This book constitutes the refereed proceedings of the 9th Pacific Rim International Conference on Artificial Intelligence, PRICAI 2006, held in Guilin, China in August 2006. The book presents 81 revised full papers and 87 revised short papers together with 3 keynote talks. The papers are organized in topical sections on intelligent agents, automated reasoning, machine learning and data mining, natural language processing and speech recognition, computer vision, perception and animation, and more.

We describe in this book, new methods for evolutionary design of intelligent s-tems using soft computing and their applications in modeling, simulation and c-trol. Soft Computing (SC) consists of several intelligent computing paradigms, including fuzzy logic, neural networks, and evolutionary algorithms, which can be used to produce powerful hybrid intelligent systems. The book is organized in four main parts, which contain a group of papers around a similar subject. The first part consists of papers with the main theme of evolutionary design of fuzzy systems in intelligent control, which consists of papers that propose new methods for designing and optimizing intelligent controllers for different applications. The second part c- tains papers with the main theme of evolutionary design of intelligent systems for pattern recognition applications, which are basically papers using evolutionary al- rithms for optimizing modular neural networks with fuzzy systems for response - tegration, for achieving pattern recognition in different applications. The third part contains papers with the themes of models for learning and social simulation, which are papers that apply intelligent systems to the problems of designing learning - jects and social agents. The fourth part contains papers that deal with intelligent s- tems in robotics applications and hardware implementations. In the part of Intelligent Control there are 5 papers that describe different c- tributions on evolutionary optimization of fuzzy systems in intelligent control. The first paper, by Ricardo Martinez-Marroquin et al. Advanced Control Systems: Theory and Applications provides an overview of

advanced research lines in control systems as well as in design, development and implementation methodologies for perspective control systems and their components in different areas of industrial and special applications. It consists of extended versions of the selected papers presented at the XXV International Conference on Automatic Control "Automatics 2018" (September 18-19, 2018, Lviv, Ukraine) which is the main Ukrainian Control Conference organized by Ukrainian Association on Automatic Control (National member organization of IFAC) and Lviv National University "Lvivska Politechnica." More than 100 papers were presented at the conference with topics including: mathematical problems of control, optimization and game theory; control and identification under uncertainty; automated control of technical, technological and biotechnical objects; controlling the aerospace craft, marine vessels and other moving objects; intelligent control and information processing; mechatronics and robotics; information measuring technologies in automation; automation and IT training of personnel; the Internet of things and the latest technologies. The book is divided into two main parts, the first concerning theory (7 chapters) and the second concerning applications (7 chapters) of advanced control systems. The first part "Advances in Theoretical Research on Automatic Control" consists of theoretical research results which deal with descriptor control impulsive delay systems, motion control in condition of conflict, inverse dynamic models, invariant relations in optimal control, robust adaptive control, bio-inspired algorithms, optimization of fuzzy control systems, and extremal routing problem with constraints and complicated cost functions. The second part "Advances in Control Systems Applications" is based on the chapters which consider different aspects of practical implementation of advanced control systems, in particular, special cases in determining the spacecraft position and attitude using computer vision system, the spacecraft orientation by information from a system of stellar sensors, control synthesis of rotational and spatial spacecraft motion at approaching stage of docking, intelligent algorithms for the automation of complex biotechnical objects, an automatic control system for the slow pyrolysis of organic substances with variable composition, simulation complex of hierarchical systems based on the foresight and cognitive modelling, and advanced identification of impulse processes in cognitive maps. The chapters have been structured to provide an easy-to-follow introduction to the topics that are addressed, including the most relevant references, so that anyone interested in this field can get started in the area. This book may be useful for researchers and students who are interested in advanced control systems.

Fuzzy logic control (FLC) has proven to be a popular control methodology for many complex systems in industry, and is often used with great success as an alternative to conventional control techniques. However, because it is fundamentally model free, conventional FLC suffers from a lack of tools for systematic stability analysis and controller design. To address this problem, many model-based fuzzy control approaches have been developed, with the

fuzzy dynamic model or the Takagi and Sugeno (T–S) fuzzy model-based approaches receiving the greatest attention. Analysis and Synthesis of Fuzzy Control Systems: A Model-Based Approach offers a unique reference devoted to the systematic analysis and synthesis of model-based fuzzy control systems. After giving a brief review of the varieties of FLC, including the T–S fuzzy model-based control, it fully explains the fundamental concepts of fuzzy sets, fuzzy logic, and fuzzy systems. This enables the book to be self-contained and provides a basis for later chapters, which cover: T–S fuzzy modeling and identification via nonlinear models or data Stability analysis of T–S fuzzy systems Stabilization controller synthesis as well as robust H? and observer and output feedback controller synthesis Robust controller synthesis of uncertain T–S fuzzy systems Time-delay T–S fuzzy systems Fuzzy model predictive control Robust fuzzy filtering Adaptive control of T–S fuzzy systems A reference for scientists and engineers in systems and control, the book also serves the needs of graduate students exploring fuzzy logic control. It readily demonstrates that conventional control technology and fuzzy logic control can be elegantly combined and further developed so that disadvantages of conventional FLC can be avoided and the horizon of conventional control technology greatly extended. Many chapters feature application simulation examples and practical numerical examples based on MATLAB®.

Research on applying principles of quantum computing to improve the engineering of intelligent systems has been launched since late 1990s. This emergent research field concentrates on studying on quantum computing that is characterized by certain principles of quantum mechanics such as standing waves, interference, quantum bits, coherence, superposition of states, and concept of interference, combined with computational intelligence or soft computing approaches, such as artificial neural networks, fuzzy systems, evolutionary computing, swarm intelligence and hybrid soft computing methods. This volume offers a wide spectrum of research work developed using soft computing combined with quantum computing systems.

Artificial Intelligence and Innovations (AIAI) will interest researchers, IT professionals and consultants by examining technologies and applications of demonstrable value. The conference focused on profitable intelligent systems and technologies. AIAI focuses on real world applications; therefore authors should highlight the benefits of AI technology for industry and services. Novel approaches solving business and industrial problems, using AI, will emerge from this conference.

This book constitutes the refereed proceedings of the 13th Ibero-American Conference on Artificial Intelligence, IBERAMIA 2012, held in Cartagena de Indias, Colombia, in November 2012. The 75 papers presented were carefully reviewed and selected from 170 submissions. The papers are organized in topical sections on knowledge representation and reasoning, information and knowledge processing, knowledge discovery and data mining, machine learning,

bio-inspired computing, fuzzy systems, modelling and simulation, ambient intelligence, multi-agent systems, human-computer interaction, natural language processing, computer vision and robotics, planning and scheduling, AI in education, and knowledge engineering and applications.