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Symposium Chairs

2015 IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning
(IEEE ADPRL'15)

Madalina Drugan, Belgium

Marco Wiering, The Netherlands

Lucian Busoniu, Romania

Adaptive dynamic programming (ADP) and reinforcement learning (RL) are two related paradigms for solving decision making problems where a performance index must be optimized over time. ADP and RL methods are enjoying a growing popularity and success in applications, fueled by their ability to deal with general and complex problems, including features such as uncertainty, stochastic effects, and nonlinearity.

ADP tackles these challenges by developing optimal control methods that adapt to uncertain systems over time. A user-defined cost function is optimized with respect to an adaptive control law, conditioned on prior knowledge of the system and its state, in the presence of uncertainties. A numerical search over the present value of the control minimizes a nonlinear cost function forward-in-time providing a basis for real-time, approximate optimal control. The ability to improve performance over time subject to new or unexplored objectives or dynamics has made ADP successful in applications from optimal control and estimation, operation research, and computational intelligence.

RL takes the perspective of an agent that optimizes its behavior by interacting with its environment and learning from the feedback received. The long-term performance is optimized by learning a value function that predicts the future intake of rewards over time. A core feature of RL is that it does not require any a priori knowledge about the environment. Therefore, the agent must explore parts of the environment it does not know well, while at the same time exploiting its knowledge to maximize performance. RL thus provides a framework for learning to behave optimally in unknown environments, which has already been applied to robotics, game playing, network management and traffic control.

The goal of the IEEE Symposium on ADPRL is to provide an outlet and a forum for interaction between researchers and practitioners in ADP and RL, in which the clear parallels between the two fields are brought together and exploited. We equally welcome contributions from control theory, computer science, operations research, computational intelligence, neuroscience, as well as other novel perspectives on ADPRL. We host original papers on methods, analysis, applications, and overviews of ADPRL. We are interested in applications from engineering, artificial intelligence, economics, medicine, and other relevant fields.

2015 IEEE Symposium on Computational Intelligence, Cognitive Algorithms, Mind, and Brain (IEEE CCMB'15)

Leonid Perlovsky, USA

Jose Fontanari, Brazil

Angelo Cangelosi, UK

Daniel Levine, USA

Robert Kozma, USA

Computational Intelligence (CI) has for many years drawn inspiration from the brain to produce data and signal processing techniques and systems which are capable of learning, evolving, adapting, self-organizing, communicating effectively with humans and machines and controlling complex systems. Brain-inspired methods are now widely used to process data produced by the brain with the aim of improving our understanding of how the brain functions and produces the remarkable intelligence exhibited by humans, which is yet elusive for computational systems.

This Symposium focuses on several core topics associated with cognitive algorithms, mind and brain, which are deemed to be of critical importance as we progress into the 21st century.

Brain-Computer Interfaces (BCIs): BCI technology enables communication from brain to computer. It would help to those who require alternative communicatory mechanisms because of neuromuscular deficiencies and speed up communicating with computers for everybody. There is a significant progress in translating speech to text, and extracting cognitive signals from EEG. Still the problem is not solved.

Computational models of brain and mind: Mathematical and neurocomputational models are contributing to the understanding of the brain-mind relations, psychological mechanisms, and unsolved mysteries. Cognitive algorithms based on these models significantly improve classical engineering solutions, and solve problems that could not be solved previously. These models can be helpful in therapy.

Cognitive Robotics: Developing robots for assistive devices and industrial applications is a key area of Computational Intelligence research. How the robot develops its own understanding of the world. Brain-inspired cognitive robotics become increasingly popular and lead to various breakthroughs in the field of autonomous systems designs and implementations.

Language and Cognition: Progress in many key areas of modeling the mind critically depends on understanding of interaction between language and cognition. Does language serve for communicating complete thoughts? Or do we think with words and phrases? If learning language and cognition depend on each other, why a child learns language early in life, but learning cognition takes much longer? We should build BCI and Cognitive Robots by taking advantage of human mechanisms of interacting language and cognition.

2015 IEEE Symposium on Computational Intelligence Applications in Smart Grid
(IEEE CIASG'15)

G.K. Venayagamoorthy, USA

Jung-Wook Park, Korea

Zita Vale, Portugal

Computational Intelligence (CI) evolves computational models and tools of intelligence capable of handling large raw numerical sensory data directly, processing them by exploiting the representational parallelism and pipelining the problem, generating reliable and just-in-time responses, and having high fault tolerance. Smart grid is basically the embedding of intelligence to enable bidirectional power flows with traditional sources of power generation, renewable sources and energy storage. CI deployment is essential in smart grid to make it a success. Research and deployment of smart grid technologies are being promoted by governments of many countries as a way of addressing energy independence, emission reductions, and bringing resilience to electricity infrastructures. The Symposium on CI Applications in Smart Grid (CIASG) aims at bringing researchers and engineers from academia and industry together to present, interact and review the latest progresses in this emerging field, and to explore future research directions to address its challenges.

2015 IEEE Symposium on Computational Intelligence in Big Data
(IEEE CIBD'15)

Yaochu Jin, UK

Yonghong Peng, UK

Paolo Lisboa, UK

Parios Polycarpou, Cyprus

IEEE CIBD2015 will be held simultaneously with other symposia and workshops in one location at the 2015 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2015). This international event promotes all aspects of the theory and applications of computational intelligence. Sponsored by the IEEE Computational Intelligence Society, this event will attract top scientists, researchers, professionals, practitioners and students from around the world. The registration to SSCI 2015 will allow participants to attend all the symposia, including the complete set of the proceedings of all the meetings, coffee breaks, lunches, and the banquet.

IEEE CIBD2015 will bring together scientists, engineers, researchers and students from around the world to present recent advances, explore challenges and opportunities in the application of Computational Intelligence (CI) techniques to the emerging and exciting field of Big Data and data sciences. This conference will provide a forum to present recent results in CI algorithms, software and systems for big data analytics, discuss the practical and theoretical challenges in big data, and explore CI solutions to tackle these challenges and issues.

IEEE CIBD2015 solicits papers that report new research results that apply CI technologies, such as deep learning, neural networks and learning algorithms, fuzzy systems, evolutionary computation, and other emerging techniques to Big Data, ranging from theory, methodologies and algorithms for handling the 3Vs (Volume, Variety, and Velocity) of big data, to their applications to the development of big data analytics systems. Successful applications of big data in industries are also encouraged to participate in this event.

2015 IEEE Symposium on Computational Intelligence in Biometrics and Identity Management
(IEEE CIBIM'15)

Fabio Scotti, Italy

Qinghan Xiao, Canada

David Zhang, Hong Kong

The 2015 IEEE International Symposium on Computational Intelligence in Biometrics and Identity Management (CIBIM 2015) will be held within the 2015 IEEE Symposium Series on Computational Intelligence (SSCI 2015).

Biometric technology is the technology of the 21st century which uses measurable physiological or behavioural characteristics to reliably distinguish one person from another. The technology is fast gaining popularity as means of personal identification and verification for different commercial, government and law enforcement applications. However, most existing biometric systems could only perform well with high quality samples of the biometric trait from cooperative users. Computational intelligence (CI), primarily based on neural networks (NN), fuzzy systems (FS), evolutionary computation (EC), etc., is a suitable approach for solving challenging real-world biometric applications.

The main objective of this symposium is to bring researchers from academia and industry together to exchange the latest theoretical and experimental CI solutions in biometrics and identity management. This event will provide an interdisciplinary forum for researchers, developers and practitioner especially in the CI field to present state of the art biometric research and technology, as well as the potential problems in real applications.

2015 IEEE Symposium on Computational Intelligence in Control and Automation
(IEEE CICA'15)

Xiao-Jun Zeng, UK

In the last two decades, Computational Intelligence has achieved the significant progress. The purpose of the IEEE Symposium on Computational Intelligence in Control and Automation (CICA 2014) is to bring together researchers, engineers, practitioners, and students from around the world to discuss and present their latest advances in the theory and application of computational intelligence in control and automation.

Topics Topics covered include theories and applications of computational intelligence technologies, such as neural networks, fuzzy systems, evolutionary computation, and other emerging techniques in the following areas (but not limited to):Control and decision, system modeling and learning, and hybrid control.

2015 IEEE Symposium on Computational Intelligence in Healthcare and e-health
(IEEE CICARE'15)

Amir Hussain, UK

Jonathan Wu, Canada

CICARE 2015 is the first Symposium of its kind, and will bring together leading research and clinical scientists, engineers, practitioners, technology and solution providers in healthcare and e-health from around the world to discuss latest advances in the field of computational intelligence applied to solving the growing scale and complexity of problems in these inter-disciplinary domains. This symposium will provide a forum for the presentation of recent results in the theory and practice of computational intelligence in healthcare and e-health systems and services, and there will also be Panel discussions to outline future research directions and challenges.

2015 IEEE Symposium on Computational Intelligence in Cyber Security
(IEEE CICS'15)

Dipankar Dasgupta, USA

Robert K. Abercrombie, USA

Computational Intelligence constitutes an umbrella of techniques, has proven to be flexible in solving dynamic and complex real-world problems. These techniques typically include Fuzzy Logic, Evolutionary Computation, Intelligent Agent Systems, Neural Networks, Cellular Automata, Artificial Immune Systems, Game Theory and other similar computational models. These techniques are now being widely used in different cyber security applications such as online behavior monitoring, e-fraud detection, robust decision support modules, etc. In order to protect Internet users from Identity Theft, Phishing, Spam and other cyber infrastructure threats, we need flexible, adaptable and robust cyber defense systems, which can make intelligent decisions (in near real-time) in detecting wide variety of threats and attacks, including active and passive attacks, external attacks and internal misuses, known and unknown attacks, viruses and spam, etc. Computational Intelligent (CI) techniques have demonstrated to enhance cyber security measures, and have been increasingly applied in the area of information security and information assurance. Moreover, the multi-faceted CI approaches appear to provide a new security paradigm to deal with influx of new threats in a large network of computers. These approaches can also be used to augment defense-in-depth architectures and to add necessary security enhancements to the design, implementation and operation of legacy and future cyber-enabled systems.

2015 IEEE Symposium on Computational Intelligence for Communication Systems and Networks (IEEE CIComms'15)

Maode Ma, Singapore

Paolo Rocca, Italy

omputational Intelligence (CI) is arguably one of the most powerful approaches for the optimization and design of complex communication systems and networks in order to meet the ever more challenging requirements and needs of nowadays applications. In this framework, a wide number of CI methodologies and algorithms based on Fuzzy Logic Systems, Learning-by-Examples Techniques, and Evolutionary Computation have been developed and effectively applied to real problems as demonstrated by the many research publications as well as the number of meetings and symposia organized worldwide. The introduction of innovative designs and advanced optimization methodologies is fundamental to offer new capabilities to the next-generation communication services and applications.

Although the research on CI applications has reached an impressive state, there are still many new research topics for the applications of CI that are continually emerging, especially in the communications and networking area such as antenna systems, microwave devices and technologies, signal processing, design of computer networks. This symposium aims at bringing researchers and engineers from academia and industry together to report, interact and review the latest progress of CI applications in the field of communication systems and networks, to explore future directions of research and to publicize CI applications to a wider audience from diverse fields.

2015 IEEE Symposium on Computational Intelligence and Data Mining (IEEE CIDM'15)

Friedhelm Schwenker, Germany

Zhi-Hua Zhou, China

Carlotta Domeniconi, USA

The 6th IEEE Symposium on Computational Intelligence and Data Mining (CIDM 2015) will bring together researchers and practitioners from around the world to discuss the latest advances in the field of computational intelligence applied to data mining. This symposium will provide a forum for the presentation of recent results in theories, algorithms, systems and applications of data mining based on computational intelligence techniques.

Topics related to all aspects of data mining, such as theories, algorithms, systems and applications, particularly those based on computational intelligence technologies, are covered.

2015 IEEE Symposium on Computational Intelligence in Dynamic and Uncertain Environments
(IEEE CIDUE'15)

Shengxiang Yang, UK

Yaochu Jin, UK

Robi Polikar, USA

IEEE CIDUE'2015 aims to bring together all researchers, practitioners and students to present and discuss the latest advances in the field of Computational Intelligence (CI), such as neural networks and learning algorithms, fuzzy systems, evolutionary computation and other emerging techniques for dealing with uncertainties encountered in evolutionary optimization, machine learning and data mining. Topics considered include evolutionary computation in dynamic and uncertain environments, learning in non-stationary and uncertain environments, mining of temporal patterns, and hybrid methodologies for dealing with uncertainties, interactions of evolution and learning in changing environments, benchmarks, performance measures, and real-world applications.

2015 IEEE Symposium on Computational Intelligence and Ensemble Learning
(IEEE CIEL'15)

Nikhil R Pal, India

P.N. Suganthan, Singapore

Xin Yao, UK

Ensemble learning attempts to enhance the performance of systems (clustering, classification, prediction, feature selection, search, optimization, rule extraction, etc.) by using multiple models instead of using a single model. This approach is intuitively meaningful as a single model may not always be the best for solving a complex problem while multiple models are more likely to yield results better than each of the constituent models. Although in the past, ensemble methods have been mainly studied in the context of classification and time series prediction, recently they are being used in algorithms in other scenarios such as clustering, fuzzy systems, evolutionary algorithms, dimensionality reduction and so on.

The aim of this symposium is to bring together researchers and practitioners who are working in the overlapping fields of ensemble methods and computational intelligence. Papers dealing with theory, algorithms, analysis, and applications of ensemble of computational intelligence methods are sought for this symposium.

2015 IEEE Symposium on Computational Intelligence for Engineering Solutions
(IEEE CIES'15)

Michael Beer, UK

Rudolf Kruse, Germany

Vladik Krenovich, USA

Developments in Engineering are characterized by a growing complexity, which is balanced by an extensive utilization of computational resources. This complexity is not only a feature of engineering systems, processes and products, it is primarily a key attribute of the respective algorithms for analysis, control and decision-making to develop those engineering solutions. To cope with complexity in this broad spectrum of demands, Computational Intelligence is implemented increasingly in virtually all engineering disciplines. This emerging approach provides a basis for developments of a new quality.

This Symposium is focused on the utilization of Computational Intelligence in this context in the entire field of engineering. Examples concern the control of processes of various kinds and for various purposes, monitoring with sensors, smart sensing, system identification, decision-support and assistance systems, visualization methods, prediction schemes, the solution of classification problems, response surface approximations, the formulation of surrogate models, etc. The engineering application fields may comprise, for example, bioengineering with prostheses design and control, civil and mechanical engineering processes, systems and structures concerned with vehicles, aircraft or bridges, industrial and systems engineering with design and control of power systems, electrical and computer engineering with developments in robotics, etc. All kinds of approaches from the field of Computational Intelligence are welcome.

As a part of the Symposium special attention is paid to sustainable engineering solutions to address current and future challenges of environmental changes and uncertainty. This includes developments dealing with climate change, environmental processes, disaster warning and management, infrastructure security, lifecycle analysis and design, etc. Events, disasters and issues under consideration may be natural such as earthquakes or tsunamis, man-made such as human failure or terrorist attacks, or a combination thereof including secondary effects such as failures in nuclear power plants, which may be critical for systems, the environment and the society. Developments which include a comprehensive consideration of uncertainty and techniques of reliable computing are explicitly invited. These may involve probabilistic including Bayesian approaches, interval methods, fuzzy methods, imprecise probabilities and further concepts. In this context robust design is of particular interest with all its facets as a basic concept to develop sustainable engineering solutions.

2015 IEEE Symposium on Computational Intelligence for Financial Engineering & Economics
(IEEE CIFEr'15)

Robert Golan, USA

Ronald R Yager, USA

Antoaneta Serguieva, UK

Katherine Malan, South Africa

The CIFEr Conference is the major collaboration between the professional engineering and financial communities, and is one of the leading forums for new technologies and applications in the intersection of computational intelligence and financial engineering and economics. Intelligent computational systems have become indispensable in virtually all financial applications, from portfolio selection to proprietary trading to risk management.

2015 IEEE Symposium on Computational Intelligence for Human-like Intelligence
(IEEE CIHLI'15)

Jacek Mańdziuk, Poland

Janusz A Starzyk, USA

Symposium organizers welcome papers related to accomplishing human-like intelligence by artificial systems. In many research domains the existing state-of-the-art AI/CI solutions significantly differ from the human competence level. Even though it is generally not clear whether human-like approach would show its upper-hand over existing methods, the exploration of this research path seems to be advantageous and challenging.

The main goal of this symposium is to promote and advance research activities related to all facets of human-like intelligence. The organizers encourage submission of the papers describing application of various Computational Intelligence paradigms including neural networks, genetic/memetic computing, fuzzy logic, machine learning, and statistical methods to human-like intelligent behavior and problem solving.

2015 IEEE Symposium on Computational Intelligence in Production and Logistics Systems
(IEEE CIPLS'15)

Bülent Çatay, Turkey


Raymond Chiong, Australia

Patrick Siarry, France

The management of production and logistics systems in today's fierce competition environment is a difficult task and has become progressively complex. Major changes in products, processes, technologies, and societies bring along remarkable challenges and increasing market demands. Modelling and optimisation of complex problems arising in production and logistics systems is of paramount importance in surviving and achieving competitive gains in productivity and quality.

In recent years, the advancements in computer technology have allowed researchers to tackle large-scale problems and to develop and integrate efficient optimisation techniques for solving them. Within this context, CIPLS aims to address issues related to the design, planning, control, and continuous improvement of production and logistics systems using computational intelligence, including local search methods, evolutionary algorithms and other nature-inspired optimisation techniques. The intention is to cover various aspects of production from aggregate planning to shop-floor execution systems and modelling, planning and control of logistics systems. Studies incorporating real-world applications are highly encouraged.

2015 IEEE Symposium on Computational Intelligence in Robotic Rehabilitation and Assistive Technologies
(IEEE CIR2AT'15)
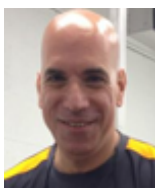
Guilherme N DeSouza, USA

Georgios Kouroupetroglou, Greece

Millions of individuals experience impaired mobility usually accompanied by limited to no manual dexterity. The "cost" associated with these disabilities includes not only those incurred through medical and support services, but also less tangible costs, such as those due lost wages and non-productivity. The goals of rehabilitation are to ameliorate life-limiting disabilities and facilitate community re-entry. While restoration of function is the most positive outcome of rehabilitation, compensatory strategies are also employed when natural function cannot be restored. A particularly promising approach is the use of assistive technologies to extend an individual's functionality and substitute for compromised functions. This symposium will highlight the latest results from world leading research labs and industry in the field of robotic rehabilitation and assistive technologies.

2015 IEEE Symposium on Computational Intelligence in Scheduling (IEEE CISched'15)

Ender Ozcan, UK

Rong Qu, UK

The 2015 IEEE Symposium on Computational Intelligence in Scheduling (IEEE CISched'15) invites research on all aspects of computational intelligence applied to scheduling problems. Due to their huge search spaces that have to be explored, scheduling problems cannot usually be solved by exact approaches. Therefore, significant research attention has been attracted on exploring techniques in Computational Intelligence (including evolutionary computation, neural networks, swarm intelligence, fuzzy logic, and their hybridizations, etc.). This symposium aims to explore recent advances in this area.

2015 IEEE IEEE Symposium on Computational Intelligence in Vehicles and Transportation Systems (IEEE CIVTS'15)

Yi Lu Murphey, USA

Ana Bazzan, Brazil

Justin Dauwels, Singapore

Robert Karlsen, USA

Dipti Srinivasan, Singapore

The research and development of intelligent vehicles and transportation systems are rapidly growing worldwide. Intelligent transportation systems are making transformative changes in all aspects of surface transportation based on vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) connectivity. With the decreasing sensor costs and computer chips, and increasing computing power and data storage capacity, it has become practical to build a host of intelligent devices in cars that can be used in airbag control, unwelcome intrusion detection, collision warning and avoidance, power management and navigation, driver alertness monitoring etc. Computational intelligence plays a vital role in building all types and levels of intelligence in vehicle and transportation systems.

The objective of this symposium is to provide a forum for researchers and practitioners to present advanced research in computational intelligence with a focus on innovative applications to intelligent vehicle and transportation systems. This symposium seeks contribution on the latest developments and emerging research in all aspects of intelligent vehicle and transportation systems.

2015 IEEE Symposium on Evolving and Autonomous Learning Systems (IEEE EALS'15)

Plamen Angelov, UK

Dimitar Filev, USA

Nikola Kasabov, New Zealand

The EALS 2015 Symposium will be a focal point for presentation of the recent advanced research results and industrial applications in the emerging area of evolving and autonomously learning systems. We live in the era of Big Data and by that they mean high volume, high variability, versatility, veracity data streams generated by Internet, sensors, organisations and the society. Learning autonomously from this ocean of data and extracting meaningful knowledge which is not fixed, but dynamically evolving is one of the key challenges that the research community and the post-industrial societies are facing now and will face in the near future. The Symposium has established a track record of high quality meetings of a relatively compact community of advanced researchers and practitioners and aims to keep and build upon this with the current event, EALS 2015.

2015 IEEE Symposium on Foundations of Computational Intelligence (IEEE FOCI'15)

Leonardo Franco, Spain

Manuel Ojeda-Aciego, Spain

Pietro S Oliveto, UK

The 2015 IEEE Symposium on Foundations of Computational Intelligence (FOCI 2015) will take place in Cape Town, South Africa as part of the IEEE Symposium Series on Computational Intelligence (SSCI 2015).

Computational intelligence techniques are widely used to tackle real-world problems due to their numerous successful applications. However, the reasons behind these successes are often not well understood. A solid theoretical foundation of computational intelligence techniques explains the reasons behind the success of these methods. Furthermore, theoretical analyses lead to the understanding of which problems are solved efficiently by a given technique and which are not. Amongst the benefits to practitioners a solid theoretical understanding (a) provides guidance on the choice of the best technique for the problem at hand, (b) helps to identify optimal parameter settings and ultimately (c) aids the design of more effective techniques.

IEEE FOCI'15 will focus on fundamental theoretical foundations of (but not limited to) the three main branches of computational intelligence, Neural Networks and other machine learning methods, Fuzzy Logic and Evolutionary Computation. Although the symposium's main interest is in theoretical foundations, computational studies of a foundational nature are also welcome.

As in the previous SSCI editions, accepted papers will be included in the Conference Proceedings Citation Index.

IEEE FOCI'15, provides an ideal forum for those who are interested in the foundational issues of computational intelligence to exchange their ideas and present their latest findings. Participants of FOCI'15 will also benefit from the interaction at one location with the participants of the several other symposia running concurrently at IEEE SSCI 2015, each highlighting various aspects of computational intelligence. As a whole, this international event will attract top researchers, practitioners, and students from around the world to discuss the latest advances in the field of computational intelligence.

2015 IEEE Symposium on Computational Intelligence on Intelligent Agents
(IEEE IA'15)

Hani Hagras, UK

Vincenzo Loia, Italy

It is our pleasure to invite you to participate in the 2015 IEEE International Symposium on Intelligent Agents (IA'15).

The 2015 IEEE International Symposium on Intelligent Agents (IEEE IA'15) will be held within the 2015 IEEE Symposium Series on Computational Intelligence (SSCI 2015).

The intersection between Computational Intelligence and Agent technology opens new significant opportunities in many fields where the representation and management of complex systems play a fundamental role. In the formulation of Agent-based systems, the role of uncertainty is crucial for an efficient and coherent resolution of complex problems. Agents overcome classical programs thanks to their inner capabilities to be autonomous and to adapt their behaviour with the changing of the environment where agents live and interact. This means that inevitably they meet uncertainty during their work, or in many cases, for the high complexity of the problem, the information they handle is (or needs to be) approximate.

IA'15 will aim to provide a leading international forum to bring together researchers and practitioners from diverse fields, such as computer science, information technology, business, education, human factors, systems engineering, and robotics. The symposium will aim to examine the design principles and performance characteristics of various approaches in intelligent agent technology. In addition, the symposium will aim to increase the cross-fertilization of ideas on the development of autonomous agents and multi-agent systems among different domains. By encouraging idea-sharing and discussions on the underlying logical, cognitive, physical, and sociological foundations as well as the enabling technologies of intelligent agents, IA'15 will foster the development of novel paradigms and advanced solutions in agent-based computing.

2015 IEEE International Conference on Evolvable Systems From Biology to Hardware (and Back!)
(IEEE ICES'15)

Andy M Tyrrell, UK

Martin Frefzer, UK

The IEEE International Conference on Evolvable Systems (IEEE ICES) has been held, uninterrupted, since 1995 and in 2013 evolved from ICES to IEEE ICES. Following on from the success in 2013 & 2014, ICES will continue to be part of the successful IEEE Symposium Series on Computational Intelligence, providing the possibility for increased interaction between ICES and the other symposiums and workshops.

Evolvable systems encompass understanding, modelling and applying biologically inspired mechanisms to physical systems. Application areas for bio-inspired algorithms include the creation of novel physical devices/systems, novel or optimised designs for physical systems and for the achievement of adaptive physical systems. Having showcased examples from analogue and digital electronics, antennas, MEMS chips, optical systems as well as quantum circuits in the past, the IEEE ICES has become the leading conference for showcasing techniques and applications of evolvable systems.

2015 IEEE Symposium on Intelligence for Embedded and Cyberphysical Systems
(IEEE IntECS'15)

Cesare Alippi, Italy

Giacomo Boracchi, Italy

Manuel Roveri, Italy

Intelligent embedded systems, i.e., embedded processing systems with sensors, actuators and computational intelligence-based computing ability, permeate our daily life. This symposium aims at disseminating recent achievements in computational intelligence towards embedded systems highlighting intelligent behaviors. This symposium aspires at building a bridge between academic and industrial research, as well as among researchers working in different fields, with the specific purpose of designing systems and embedded systems able to adapt and interact with evolving environments.

2015 IEEE Symposium on Computational Intelligence in Multicriteria Decision-Making
(IEEE MCDM'15)

Yaochu Jin, UK


Piero Bonissone, USA

Joshua Knowles, UK

IEEE MCDM'15 will be held simultaneously with over 20 other symposia and workshops in one location at the 2015 IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2015). This international event promotes all aspects of the theory and applications of computational intelligence. Sponsored by the IEEE Computational Intelligence Society, this event will attract top researchers, professionals, practitioners and students from around the world.

IEEE MCDM'2015 aims to bring together scientists, engineers and students from around the world to discuss the latest advances in the field of CI applied to issues in MCDM. Topics covered include applications of computational intelligence technologies, such as neural networks and learning algorithms, fuzzy systems, evolutionary computation, and other emerging techniques in the following or similar areas: Multiobjective Search/Optimization (MOO), Multiobjective Machine Learning (MOML), Decision Making (DM) Techniques, Interactive Visualization (IV), and Integration of MOO, ML, DM, and IV to support Multicriteria Decision Making.

2015 IEEE Symposium on Robotic Intelligence in Informationally Structured Space
(IEEE RiiSS'15)

LooChu Kiong, Malaysia
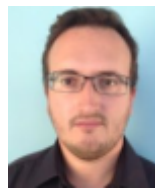
Janos Botzheim, Japan

The 2015 IEEE Symposium on Robotic Intelligence in Informationally Structured Space (IEEE RiiSS'15) will bring together scientists, engineers and students from around the world to discuss the latest advances in the field of robot intelligence within the context of informationally structured space. Recently, the emerging synthesis of information technology (IT), network technology (NT), and robot technology (RT) is one of the most promising approaches to realize a safe, secure, and comfortable society for the next generation. Human-centered systems require, in particular, sophisticated physical and information services which are based on sensor networks, ubiquitous computing, and intelligent artifacts. Information resources and the accessibility within an environment are essential for people and for robots. The environment surrounding people and robots should have a structured platform for gathering, storing, transforming, and providing information. Such an environment is called informationally structured space.

The intelligent computing for the design and use of the informationally structured space should be discussed from various points of view at the same time. An intelligent robot can be an interface connecting between people and informationally structured space to search and provide information. Computational intelligence plays an important role in dealing with perception, action, decision making, planning, adaptation, and learning of robots in the informationally structured space.

2015 IEEE Symposium on Differential Evolution
(IEEE SDE'15)

Janez Brest, Maribor

Swagatam Das, India

Ferrante Neri, UK

Differential Evolution (DE) is arguably one of the most powerful stochastic real-parameter optimization algorithms in current use. DE is a very simple algorithm, requiring only a few lines of code in most of the existing programming languages. Additionally, it has very few control parameters. Nonetheless, DE exhibits remarkable performance in optimizing a wide variety of optimization problems in terms of final accuracy, convergence speed, and robustness as evidenced by the consistently excellent performance in all of the CEC competitions (http://www3.ntu.edu.sg/home/epnsugan). The last decade has witnessed a rapidly growing research interest in DE as demonstrated by the significant increase in the number of research publications on DE in the forms of monographs, edited volumes and archival articles. Although research on and with DE has reached an impressive state, there are still many open problems and new application areas are continually emerging for the algorithm. This Symposium aims at bringing researchers and users from academia and industry together to report, interact and review the latest progress in this field, to explore future directions of research and to publicize DE to a wider audience from diverse fields joining the IEEE SSCI 2015 in Cape Town, South Africa and beyond.

2015 IEEE Swarm Intelligence Symposium
## (IEEE SIS'15)

Yuhui Shi, China

P.N. Suganthan, Singapore

The 2015 IEEE Swarm Intelligence Symposium (IEEE SIS'15) will be held in Cape Town, South Africa, December 07 - 10, 2015. It will be a part of the IEEE Symposium Series on Computational Intelligence 2015, which consists of over 20 symposia. The theme of the SIS 2015 is to provide a platform for researchers, academicians, students, engineers, and government officers from all over the world to share and exchange information in the swarm intelligence research areas ranging from algorithm development to real-world applications. Authors are invited to submit their original and unpublished work related to swarm intelligence, including research, theory, development, and applications.

2015 IEEE Workshop on Computational Intelligence Tools
(IEEE WCIT'15)

Giovanni Acampora, UK
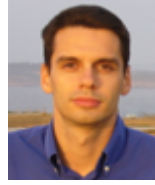
Marek Reformat, Canada

Computational Intelligence methodologies have become a useful support for scientists and engineers working both in academia and business environments due to their capabilities to enable the design and development of systems able to adapt their behaviour to meet complex and dynamic goals in a range of application domains. As a consequence, during the last years, many software tools have been developed to speed up the implementation of frameworks for computational intelligence and enable a full interoperability among the different actors involved in the frameworks design. A large amount of these tools are developed by the scientific community as free and open source software, offering many benefits such as the quicker detection of errors, the development of innovative applications, the faster adoption of computational intelligence techniques in other scientific areas and in industry, and so on.

The goal of this workshop is to provide a leading international forum to bring together researchers and practitioners from diverse fields, in order to examine and improve the current state-of-the-art, original and recent research on Tools for Computational Intelligence.