AIAI 2014

10th International Conference on Artificial Intelligence Applications and Innovation

Program

19-21

September
Greece

Paradise Mare
Aldemar Luxury
Rhodes

ARISTOTLE
UNIVERSITY
OF THESSALONIKI

DEMOCRITUS
UNIVERSITY
OF THRACE

Springer

It has been 58 years since the term Artificial Intelligence (AI) was coined in 1956 by John McCarthy at the Massachusetts Institute of Technology USA. Since then, after huge efforts of the international scientific community, sophisticated and advanced approaches e.g. games playing, (computers capable to play games against human opponents) natural languages, computers able to see, hear and react to sensory stimuli, that would appear only as science fiction in the past are gradually becoming a reality. Multi Agent systems and Autonomous Agents, Image Processing, Biologically inspired Neural Networks (Spiking ANN) are already a reality. Moreover AI has offered the international scientific community many mature tools easily used, well documented and applied. These efforts have been continuously technically supported by various scientific organizations like the IFIP.

The International Federation for Information Processing (IFIP) was founded in 1960 under the auspices of UNESCO, following the first historical World Computer Congress held in Paris in 1959. The 1st AIAI conference (Artificial Intelligence Applications and Innovations) was organized in Toulouse/France in 2004 by the IFIP. Since then, it has always been technically supported by the Working Group 12.5 "*Artificial Intelligence Applications*". After 10 years of continuous presence, it has become a well known and recognized mature event, offering AI scientists from all over the globe, the chance to present their research achievements. The 10th AIAI was held in Rhodes island Greece, 19-21 of September 2014.

Following a long standing tradition, this Springer volume belongs to the IFIP AICT series and it contains the accepted papers that were presented orally in the AIAI'2014 main conference. An additional volume comprises of the papers that were accepted and presented to the workshops that were held as parallel events. Totally 4 workshops were organized, by invitation to prominent and distinguished colleagues, namely:

- the 3rd CoPA (Conformal Prediction and its Applications),
- the 3rd MHDW (Mining Humanistic Data Workshop),
- the 3rd IIVC (Intelligent Innovative Ways for Video-to-Video Communications in Modern Smart Cities), and
- the 1st MT4BD (New Methods and Tools for Big Data).

It is interesting that three of the above workshops are organized for the third time in the row, which means that they are well established in the AI community.

As the title of the conference denotes, there are two core orientations of interest, basic research AI approaches and also applications in real world cases. The diverse nature of papers presented, demonstrates the vitality of AI computing methods and proves the wide range of AI applications as well.

All papers have passed through a peer review process by at least 2 independent academic referees. Where needed a third and a fourth referee was consulted to resolve any potential conflicts. In the 10th AIAI conference, 43.3% of the submitted manuscripts (totally 65) were accepted for oral presentation. From them only 32 (21.3%) were accepted as full papers whereas 33 (22%) were accepted as short ones. The authors of accepted papers of the main event come from 20 different countries, namely: Brazil, Bulgaria, Canada, Cyprus, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Greece, Iran, Italy, Pakistan, Poland, Russia, Spain, Switzerland, Tunisia, Turkey.

Three distinguished keynote speakers were invited to lecture to the 10th AIAI conference.

1. Professor Hojjat Adeli, Ohio State University, USA.

Title: *"Multi-Paradigm Computational Intelligence Models for EEG-based Diagnosis of Neurological and Psychiatric Disorders"*

*   Professor of Biomedical Engineering, Biomedical Informatics, Civil, Environmental, and Geodetic Engineering, Electrical and Computer Engineering, and Neuroscience at The Ohio State University.
*   Author of over 500 research and scientific publications in various fields of computer science, engineering, applied mathematics, and medicine.
*   Author/Co-Author of 15 books.
*   Founder and Editor-in-Chief of the international research journals *Computer-Aided Civil and Infrastructure Engineering*. Editor-in-Chief of *International Journal of Neural Systems.*
*   Numerous academic, research, and leadership awards, honors, and recognition.
*   Keynote/Plenary Lecturer at 43 national and international computing conferences held in 28 different countries.
*   Distinguished Member of ASCE, and a Fellow of several societies including AAAS, IEEE, and American Neurological Association.

2. Professor Plamen Angelov, Lancaster University, UK.

Title: *"Autonomous Learning Systems: association-based learning"*

*   Chair in Intelligent Systems and leads the Intelligent Systems Research within the School of Computing and Communications, Lancaster University, UK
*   Founding Chair of the Technical Committee on Evolving Intelligent Systems with Systems, Man and Cybernetics Society, IEEE
*   Co-recipient of several best paper awards at IEEE conferences (2006 and 2009, 2012, 2013)
*   Co-recipient of two prestigious Engineer 2008 Technology + Innovation awards for Aerospace and Defense
*   Co-recipient of the Special Award as well as the Outstanding Contributions Award by IEEE and INNS (2013)
*   Editor-in-Chief of the Springer journal Evolving Systems, Associate Editor of prestigious IEEE Transactions on Fuzzy Systems and of Elsevier's Fuzzy Sets and Systems

3. Professor Tharam Dillon, La Trobe University, Australia

Title: *"Conjoint Mining of Data and Content with Applications in Business, Biomedicine, Transport Logistics and Electrical Power Systems"*

*   Life Fellow IEEE, FACS, FIE
*   Editor-in-Chief International Journal of Computer Systems Science & Engineering (UK) 1986-1991 Butterworths, 1992-1996 CRL Publishing.
*   Editor-in-Chief International Journal of Engineering Intelligent Systems (UK) 1993-1996.
*   Chief Co-editor International Journal of Electric Power and Energy Systems (UK) 1978-1991, Butterworths 1992-1996 Elsevier.
*   Associate Editor IEEE Transactions on Neural Networks (USA) 1994 - 2004.

The accepted papers of the 10th AIAI conference are related to the following thematic topics:

-   Artificial Neural Networks
-   Bioinformatics
-   Feature extraction
-   Clustering
-   Control systems

- Data mining
- Engineering Applications of AI
- Face Recognition - Pattern Recognition
- Filtering
- Fuzzy Logic
- Genetic algorithms, Evolutionary computing
- Hybrid Clustering Systems
- Image and Video Processing
- Multi Agent Systems
- Environmental Applications
- Multi attribute DSS
- Ontology - Intelligent Tutoring systems
- Optimization, Genetic Algorithms
- Recommendation Systems
- Support Vector Machines - Classification
- Text Mining

- We wish to thank Professors Harris Papadopoulos (Frederick University, Cyprus), Alex Gammerman and Vladimir Vovk (Royal Holloway University of London, UK) for their common efforts towards the organization of the 3rd CoPA workshop.
- We are also grateful to Professors Spyros Sioutas, Katia Lida Kermanidis (Ionian University, Greece), Christos Makris (University of Patras Greece) and Giannis Tzimas (TEI of Western Greece). Due to their invaluable contribution and hard work the 3rd MHDW workshop was held successfully once more and it has already become a well-accepted event running in parallel with AIAI.
- The 3rd IIVC workshop was an important part of the AIAI'2014 event and it was driven by the hard work by Drs. Ioannis P. Chochliouros and Ioannis M. Stephanakis (Hellenic Telecommunications Organization - OTE, Greece) and Professors Vishanth Weerakkody (Brunel University, UK) and Nancy Alonistioti (National & Kapodistrian University of Athens).
- It is a pleasure to host the MT4BD'2014 in the framework of the AIAI conference. We wish to sincerely thank its organizers for their great efforts. More specifically we wish to thank Professors Spiros Likothanassis (University of Patras, Greece), Dimitris Tzovaras (CERTH/ITI, Greece), Eero Hyvönen (Aalto University, Finland) and Jörn Kohlhammer (Fraunhofer-Institut für Graphische Datenverarbeitung IGD, Germany).

The AIAI'2014 had a high correspondence from scientists from all parts of the globe and we would like to thank all participants for this. The 10th organization of AIAI is really a milestone. After ten years, it has been established as a mature event with loyal followers and it has plenty of new and qualitative research results to offer to the International scientific community. We hope that the readers of these proceedings will be highly motivated and stimulated for further research in the domain of AI in general.

September 2014
AIAI'2014 Chairs

ORGANISING COMMITTEE

GENERAL CHAIRS

Tharam Dillon, *Latrobe University, Melbourne, Australia*

PROGRAM CHAIRS

Lazaros Iliadis, *Democritus University of Thrace, Greece*
Ilias Maglogiannis, *University of the Piraeus, Greece*
Harris Papadopoulos, *Frederick University, Cyprus*

WORKSHOPS CHAIRS

Spyros Sioutas, *Ionio University, Greece*
Christos Makris, *University of Patras, Greece*

ORGANIZING COMMITTEE CHAIRS

Yannis Manolopoulos, *Aristotle University of Thessaloniki, Greece*
Andreas Andreou, *Cyprus University of Technology, Cyprus*

ADVISORY COMMITTEE

Elias Pimenidis, *University of East London, UK*
Chrisina Jayne, *Coventry University, UK*
Haralambos Mouratidis, *University of Brighton, UK*

HONORARY CHAIRS

Nikola Kasabov, *KEDRI Auckland University of Technology, New Zealand*
Vera Kurkova, *Czech Academy of Sciences, Czech Republic*
Hojjat Adeli, *The Ohio State University, USA*

WEBSITE AND ADVERTISING CHAIR

Ioannis Karydis, *Ionian University, Greece*

PROGRAM COMMITTEE

El-houssaine Aghezzaf, *Ghent University, Belgium*
Michel Aldanondo, *Toulouse University - Mines Albi, France*
George Anastassopoulos, *Democritus University of Thrace, Greece*
Ioannis Andreadis, *Democritus University of Thrace, Greece*
Andreas Andreou, *Cyprus University of Technology, Cyprus*
Emili Balaguer-Ballester, *Bournemouth University, UK*
Zbigniew Banaszak, *Warsaw University of Technology, Poland*
Zorana Bankovic, *Universidad Politecnica de Madrid, Spain*
Ramazan Bayindir, *Gazi University, Turkey*
Nik Bessis, *University of Derby, UK*
Peter Brida, *University of Zilina, Slovakia*
Frantisek Capkovic, *Slovak Academy of Sciences, Slovakia*
George Caridakis, *National Technical University of Athens, Greece*
Ioannis Chamodrakas, *National and Kapodistrian University of Athens, Greece*
Aristotelis Chatziioannou, *Institute of Biological Research & Biotechnology, National Hellenic Research Foundation, Greece*
Badica Costin, *University of Craiova,Romania*
Ruggero Donida Labati, *University of Milano, Italy*
Georgios Evangelidis, *University of Macedonia, Greece*
Javier Fernandez De Canete, *University of Malaga, Spain*
Mauro Gaggero, *University of Genoa, Italy*
Alexander Gammerman, Royal *Holloway, University of London, UK*
Christos Georgiadis, *University of Macedonia, Greece*
Ioannis Hatzilygeroudis, *University of Patras, Greece*
Hakan Haberdar, *University of Houston, USA*
Petr Hajek, *University of Parduvice, Czech Republic*
Francisco Herrera, *University of Granada, Spain*
Jacek Kabzinski, *Technical University of Lodz, Poland*
Antonios Kalampakas, *University of Kuwait, Kuwait*
Achilles Kameas, *Hellenic Open University, Greece*
Stelios Kapetanakis, *University of Brighton, UK*
Kostas Karpouzis, *National Technical University of Athens, Greece*
Ioannis Karydis, *Ionian University, Greece*
Petros Kefalas, *City College of Thessaloniki, Greece*
Katia Lida Kermanidis, *Ionian University, Greece*

PC MEMBERS

Muhammad Khurram Khan, *King Saud University, Saudi Arabia*
Dimitrios Kosmopoulos, *Demokritos National Centre for Scientific Research, Greece*
Ondrej Krejcar, *University of Hradec Kralove, Czech Republic*
Stelios Krinidis, *TEI of Kavala, Greece*
Michail Krinidis, *TEI of Kavala, Greece*
Adam Krzyzak, *Concordia University, Canada*
Vera Kurkova, *Czech Academy of Sciences, Czech Republic*
Ruggero Donida Labati, *Universita degli Studi di Milano, Italy*
Helge Langseth, *Norwegian University of Science and Technology, Norway*
Spiridon Likothanassis, *University of Patras, Greece*
Mario Malcangi, *Universita degli Studi di Milano, Italy*
Manolis Maragoudakis, *University of Aegean, Greece*
Francesco Marcelloni, *University of Pisa, Italy*
Konstantinos Margaritis, *University of Macedonia, Greece*
Seferina Mavroudi, *Technological Education Institute of Western Greece, Greece*
Haralambos Mouratidis, *University of East London, UK*
Nicoletta Nicolaou, *University of Cyprus, Cyprus*
Vladimir Olej, *University of Pardubice, Czech Republic*
Eva Onaindia, *Universidad Politecnica de Valencia, Spain*
Mihaela Oprea, *University of Ploiesti, Romania*
Stefanos Ougiaroglou, *University of Macedonia, Greece*
Harris Papadopoulos, *Frederick University of Cyprus, Cyprus*
Elpiniki I. Papageorgiou, *Technological Education Institute of Central Greece, Greece*
Efi Papatheocharous, *Swedish Institute of Computer Science, Sweden*
Miltos Petridis, *University of Brighton, UK*
Vassilis Plagianakos, *University of Central, Greece*
Manuel Roveri, *Politecnico di Milano, Italy*
Alexander Ryjov, *Lomonosov Moscow State University, Russia*
Alexander B. Sideridis, *Agricultural University of Athens, Greece*
Ioannis Stephanakis, *OTE Hellenic Telecommunications S.A., Greece*
Ilias Sakellariou, *University of Macedonia, Greece*
Christos Schizas, *University of Cyprus, Cyprus*
Kyriakos Sgarbas, *University of Patras, Greece*
Alexei Sharpanskykh, *Delft University of Technology, The Netherlands*

PC MEMBERS

Dragan Simic, *University of Novi Sad, Serbia*
Spyros Sioutas, *Ionian University, Greece*
Stefanos Spartalis, *Democritus University of Thrace, Greece*
Anastasios Tefas, *Aristotle University of Thessaloniki, Greece*
Konstantinos Theofilatos, *University of Patras, Greece*
Nicolas Tsapatsoulis, *Cyprus University of Technology, Cyprus*
Theodore Tsiligiridis, *Agricultural University of Athens, Greece*
Giannis Tzimas, *CTI, Greece*
Theodoros Tzouramanis, *University of the Aegean, Greece*
Vassilios Verykios, *Hellenic Open University, Greece*
Jørgen Villadsen, *Technical University of Denmark, Denmark*
Demosthenes Vouyioukas, *University of the Aegean, Greece*
Vladimir Vovk, *Royal Holloway, University, UK*
Arlette Van Wissen, *VU University Amsterdam, Netherlands*
Michalis Xenos, *Hellenic Open University, Greece*
Xin-she Yang, *University of Cambridge, UK*
Engin Yesil, *Technical University of Istanbul, Turkey*
Contantine Yialouris, *Agricultural University of Athens, Greece*
Peter Yuen, *Cranfield University, UK*
Drago Zagar, *University of Osijek, Croatia*

Hojjat Adeli
FRI**19** 09:00

SAT**20** 09:00
Plamen Angelov

Hojjat Adeli *received his Ph.D. from Stanford University in 1976 at the age of 26. He is currently Professor of Biomedical Engineering, Biomedical Informatics, Civil, Environmental, and Geodetic Engineering, Electrical and Computer Engineering, and Neuroscience at The Ohio State University. He has authored over 500 research and scientific publications in various fields of computer science, engineering, applied mathematics, and medicine. He has authored/co-authored 15 books including Machine Learning - Neural Networks, Genetic Algorithms, and Fuzzy Systems, Wiley, 1995; Neuro-computing for Design Automation, CRC Press, 1998; Intelligent Infrastructure – Neural Networks, Wavelets, and Chaos Theory for Intelligent Transportation Systems and Smart Structures, CRC Press, 2009; Wavelet-Based Vibration Control of Smart Building and Bridge Structures, CRC Press, 2009; Automated EEG-based Diagnosis of Neurological Disorders - Inventing the Future of Neurology, CRC Press, 2010; Computational Intelligence - Synergies of Fuzzy Logic, Neural Networks and Evolutionary Computing, Wiley, 2013; He is the Founder and Editor-in-Chief of the international research journals Computer-Aided Civil and Infrastructure Engineering, now in 29th year of publication and Integrated Computer-Aided Engineering, now in 22nd year of publication. He is also the Editor-in-Chief of International Journal of Neural Systems. In 1998 he received the Distinguished Scholar Award, from The Ohio State University's highest research award "in recognition of extraordinary accomplishment in research and scholarship". He is the recipient of numerous other awards and honors such as The Ohio State University College of Engineering Lumley Outstanding Research Award (quadruple winner); Peter L. and Clara M. Scott Award for Excellence in Engineering Education, and Charles E. MacQuigg Outstanding Teaching Award, the 2012 IEEE-EMBS Outstanding Paper Award (IEEE Engineering in Medicine and Biology Society), August 2012 for the paper "Principal Component Analysis-Enhanced Cosine Radial Basis, Special Medal from The Polish Neural Network Society in Recognition of Outstanding Contribution to the Development of Computational Intelligence, and Eduardo Renato Caianiello Award for Excellence in Scientific Research from the Italian Society of Neural Networks "for Having Realized the Model of Interdisciplinary Scientist in the Pursuit of E.R. Caianiello Project and for the Excellent Results in Engineering and Neuroscience." In 2010 Wiley, the publisher of over 1500 journals, created the Hojjat Adeli Award for Innovation in Computing given annually with a cash prize of $1000. In 2011 World Scientific Publishing Co created Hojjat Adeli Award for Outstanding Contributions in Neural Systems given annually with a cash prize of $500. He is a Distinguished Member of ASCE, and a Fellow of several societies including AAAS, IEEE, and American Neurological Association.*

Multi-Paradigm Computational Intelligence Models for EEG-based Diagnosis of Neurological and Psychiatric Disorders

Prof. Plamen Angelov *is Chair in Intelligent Systems and leads the Intelligent Systems Research within the School of Computing and Communications, Lancaster University, UK. He is Founding Chair of the Technical Committe on Evolving Intelligent Systems with Systems, Man and Cybernetics Society, IEEE. He is Co-recipient of several best paper awards at IEEE conferences (2006 and 2009, 2012, 2013), two prestigious Engineer 2008 Technology + Innovation awards for Aerospace and Defence and also Co-recipient of the Special Award as well as the Outstanding Contributions Award by IEEE and INNS (2013). He is Editor-in-Chief of the Springer journalB Evolving SystemsB (ISSN 1868-6478) and Associate Editor (AE) of prestigiousB IEEE Transactions on Fuzzy SystemsB and of Elsevier'sB Fuzzy Sets and Systems.*

Autonomous Learning Systems: association-based learning

Traditionally, machine learning assumes a significant involvement of the human. The reality of 21st century, however, poses new challenges which come from the Big data paradigm, explosion of usage of social networks and multimedia, an exponentially growing data streams and cheap computational processing and sensor devices. The bottleneck in the old human desire to extract seamlessly and in real time useful knowledge is now not the hardware or access to data, but the algorithms which are still largely based on decades if not centuries old paradigm of availability of all data (offline, cross validations), their stationarity (changes like the financial crash of 2008 proved to be enigmatic) and limited size which can be stored and communicated/transmitted as we wish (bandwidth limitations).

In this talk the basics of Autonomous Learning Systems with a particular emphasis to the role of a new paradigm β association-based learning using data density - will be presented in a systematic way. Traditionally, learning is based on first principles, expert-based or probabilistic (statistical) models. Probabilistic models in return are most widely represented by the so called frequentistic (Bayesian) paradigm which is three centuries old and has some inherent contradictions. An alternative which is based on the similarity, proximity and density

in the data space has been recently introduced and will be detailed in the talk. Data density differs (although it resembles) the well known and widely used probability density function (pdf), information potential and other similar representations related to system state and structure description.

Addressing these challenges over the last decade the author pioneered a new approach called dynamically evolving systems. This new concept is based on several principles: i) the mathematical model structure is not fixed, but is dynamically evolving (it can both grow and shrink, reduce other dimensions such as inputs etc.); ii) the complex systems is better to be decomposed into smaller (possibly overlapping) sub-systems/models (the old Latin sentence Divide et impera); iii) adapting to new environment and internal changes in terms not only of parameters of the system but also of its structure; iv) reducing the role of the human to start/stop and possibly monitor, but not to provide system structure, for example; v) use computationally efficient recursive calculations and this avoiding iterative solutions and operating on-line in real-time, sample by sample; vi) avoiding use of problem and user-specific thresholds and parameters in general.

*Prof. **Tharam Dillon** is a Professor at La Trobe University, Australia. He is Life Fellow IEEE, FACS, FIE. He is Editor-in-Chief International Journal of Computer Systems Science & Engineering (UK) 1986-1991 Butterworths, 1992-1996 CRL Publishing and also Editor-in-Chief International Journal of Engineering Intelligent Systems (UK) 1993-1996. He is Chief Co-editor International Journal of Electric Power and Energy Systems (UK) 1978-1991, Butterworths 1992-1996 Elsevier. He is Associate Editor IEEE Transactions on Neural Networks (USA) 1994 - 2004.*

Conjoint Mining of Data and Content with Applications in Business, Bio-medicine, Transport Logistics and Electrical Power Systems

Digital information within an enterprise consists of (1) structured data and (2) unstructured content. The structureddata includes enterprise and business data like sales, customers, products, , accounts, inventory and enterprise assets, etc.while the content includes contracts, reports, emails, customer opinions, transcribed calls, on-line inquires, complements and complaints. Further, cutting edge businesses also using GPS tracking or surveillance monitors as well as sensor technologies for productivity, performance and efficiency measures, and these are provided by outsourcersetc. Similarly in the Biomedicalarea, resources can be structured data say in Swiss-Prot or unstructured text information in journal articlesstored in content repositories such as PubMed. The structured data and the unstructured content generally reside inentirely separate repositories with the former being managed by a DBMS and the latter by a content manager frequentlyprovided by an outsourceror vendor. This separation is undesirable since the information content of these sources iscomplementary. Further, each outsourcer or vendor keep the data on their own Cloud, and data are not sharable between the vendor systems, and most vendor system were not integrated with the enterprise systems, and leaves the organization to consolidate the data and information manually for data analytics. Effective knowledge and information use requires seamless access and intelligent analysis of informationin its totality to allow enterprises to gain enhanced critical insights.This is becoming

even more important, as the proportion of structured to unstructured information has shifted from 50-50 in the 1960s to 5-95 today. Unlesswe can effectively utilize the unstructured content conjointly with the structured data, we will only obtain very limitedand shallow knowledge discovery from an increasingly narrow slice of information. The techniques developed in our research will then be used to address significant issues in three application areas, but potential applications withsignificant impact are much more extensive.

3rd Workshop on
Conformal Prediction and its Applications

Quantifying the uncertainty of the predictions produced by classification and regression techniques is an important problem in the field of Machine Learning. Conformal Prediction is a recently developed framework for complementing the predictions of Machine Learning algorithms with reliable measures of confidence. The methods developed based on this framework produce well-calibrated confidence measures for individual examples without assuming anything more than that the data are generated independently by the same probability distribution (i.i.d.).

Since its development the framework has been combined with many popular techniques, such as Support Vector Machines, k-Nearest Neighbours, Neural Networks, Ridge Regression etc., and has been successfully applied to many challenging real world problems, such as the early detection of ovarian cancer, the classification of leukaemia subtypes, the diagnosis of acute abdominal pain, the assessment of stroke risk, the recognition of hypoxia in electro-encephalograms (EEGs), the prediction of plant promoters, the prediction of network traffic demand, the estimation of effort for software projects and the backcalculation of non-linear pavement layer moduli. The framework has also been extended to additional problem settings such as semi-supervised learning, anomaly detection, feature selection, outlier detection, change detection in streams and active learning. The aim of this workshop is to serve as a forum for the presentation of new and ongoing work and the exchange of ideas between researchers on any aspect of Conformal Prediction and its applications.

The workshop welcomes submissions introducing further developments and extensions of the Conformal Prediction framework and describing its application to interesting problems of any field.

The topics of the workshop include, but are not limited to:

Non-conformity measures
Modifications of the framework
Venn prediction
On-line compression modeling
Extensions to additional problem settings
Theoretical analysis of Conformal Prediction techniques
Applications/usages of Conformal Prediction

Honorary Chairs

Vladimir Vapnik, *NEC, USA, and Royal Holloway, University of London, UK*
Alexei Chervonenkis, *Russian Academy of Sciences, Russia, and Royal Holloway, University of London, UK*

Workshop Chairs

Harris Papadopoulos, *Frederick University, Cyprus*
Alex Gammerman, *Royal Holloway, University of London, UK*
Vladimir Vovk, *Royal Holloway, University of London, UK*

Program Committee

Vineeth Balasubramanian, *Indian Institute of Technology - Hyderabad, India*
Anthony Bellotti, *Imperial College London, UK*
Mohamed Hebiri, *Universite de Marne-la-Vallee, France*
Shen-Shyang Ho, *Nanyang Technological University, Singapore*
Zakria Hussain, *University College London, UK*
Yuri Kalnishkan, *Royal Holloway University of London, UK*
Matjaz Kukar, *University of Ljubljana, Slovenia*
Antonis Lambrou, *Royal Holloway University of London, UK*
Rikard Laxhammar, *University of Skovde, Sweden*
Jing Lei, *Carnegie Mellon University, USA*
Zhiyuan Luo, *Royal Holloway University of London, UK*
Andrea Murari, *Consorzio RFX, Italy*
Ilia Nouretdinov, *Royal Holloway University of London, UK*
Klea Panayidou, *Frederick University, Cyprus*
Savvas Pericleous, *Frederick University, Cyprus*
Frank-Michael Schleif, *Bielefeld University, Germany*
Evgueni N. Smirnov, *Maastricht University, The Netherlands*
David Surkov, *Egham Capital, UK*
Jesus Vega, *Asociacion EURATOM/CIEMAT para Fusion, Spain*
Larry Wasserman, *Carnegie Mellon University, USA*
Fan Yang, *Xiamen University, China*

3rd Workshop on Intelligent Innovative Ways for Video-to-Video Communications in Modern Smart Cities

Modern "Smart Cities" combine diverse technologies in order to reduce their environmental impact and offer to their citizens a better quality of life. This is not, however, simply just a matter of pure technical challenge. Organizational change in (local) governments - and indeed society at large - is just as essential. "Making a city smart" is therefore a very multidisciplinary challenge, "bringing together" city officials, innovative suppliers and technology operators/providers, national and EU policymakers, academics and civil society. This Workshop has been established to disseminate and assess research results as well as original technical reports/deliverables pertaining to "Smart City" applications and related pilots of video-to-video (v2v) communications and intelligent telecommunications applications (such as those originating from the context of the actual EU-funded LiveCity Project – Grand Agreement No.297291). The Workshop encourages papers from industry and academia, covering the following general areas:

- E-government, strategies and smart city business models, application scenarios in the areas of Emergency Services, eHealth and City Experiences, service evaluation and delivery - Regulatory Issues and Challenges – Ethical Issues
- AI applications and agents in telecommunications – Cloud computing and virtualization
- Video-to-video and other multimedia-based communications; IPv6 and mobile networks
- Over-The-Top (OTT) Models, SLAs (Service Level Agreements), QoS (Quality of Service) mechanisms and QoE (Quality of Experience) in modern telecommunication networks

Program Chairs

Ioannis P. Chochliouros, *Research Programs Section - Fixed, Hellenic Telecommunications Organization (OTE) S.A., Greece*
Vishanth Weerakkody, *Business School, Brunel University, UK*
Nancy Alonistioti, *Department of Informatics & Telecommunications National & Kapodistrian University of Athens (NKUA), Greece*
Ioannis M. Stephanakis, *Hellenic Telecommunications Organization (OTE) S.A., Greece*

Program Committee

George Lyberopoulos, *Cosmote, Greece*

Kostas Berberidis, *Head of Signal Processing & Comm. Lab, Dept. of Comp. Eng. & Informatics, University of Patras*

Edmundo Monteiro, *University of Coimbra, Portugal*

Donal Morris, *CEO, RedZinc Services Ltd., Dublin, Ireland*

Latif Ladid, *President, IPv6 Forum & Senior Researcher, SnT, Universite du Luxembourg, Luxembourg*

Rod McCall, *SnT, Universite du Luxembourg, Luxembourg*

Jeanne Caffrey, *QuartzSpark Ltd., Ireland*

Eleni Patouni, *NKUA, Department of Informatics and Telecommunications*

Panagis Magdalinos, *NKUA, Department of Informatics and Telecommunications*

Evangelos Sfakianakis, *Research Programs Section - Fixed, OTE, Greece*

Ramzi El-Haddadeh, *Business School, Brunel University, UK*

Kelly Georgiadou, *Research Programs Section - Fixed, OTE, Greece*

George Diakonikolaou, *OTE, Greece*

Dimitrios Charalambidis, *ICT Coordinator, "Saint Joseph", Hellenic-French School, Greece*

Maria Belesioti, *Research Programs Section - Fixed, OTE, Greece*

Luis Cordeiro, *OneSource, Consultoria Informatica, LDA, Portugal*

Joao Goncalves, *OneSource, Consultoria Informatica, LDA, Portugal*

Anastasios Dagiuklas, *Hellenic Open University, Greece*

George Caridakis, *National Technical University of Athens, Greece*

George C. Anastassopoulos, *Democritus University of Thrace, Greece*

Nikoletta Liakostavrou, *OTE Museum of Telecommunications, Kifissia, Athens, Greece*

Yannis Kabourakis, *OTE Museum of Telecommunications, Kifissia, Athens, Greece*

Konstantinos Ioannidis, *Lawyer, Mayor of the Vrilissia Municipality, Greece*

Makis Stamatelatos, *NKUA, Department of Informatics and Telecommunications*

Michael Wendt, *Ernst-Moritz-Arndt Universität, Universitätsmedizin Greifswald (EMAUG), Germany*

Konrad Meissner, *Ernst-Moritz-Arndt Universität, Universitätsmedizin Greifswald (EMAUG), Germany*

Bibiana Metelmann, *Ernst-Moritz-Arndt Universität, Universitätsmedizin Greifswald (EMAUG), Germany*

Camilla Metelmann, *Ernst-Moritz-Arndt Universität, Universitätsmedizin Greifswald (EMAUG), Germany*

Martin von der Heyden, *Ernst-Moritz-Arndt Universität, Universitätsmedizin Greifswald (EMAUG), Germany*

Peadar Gilligan, *The Beaumont Hospital in Dublin / The Royal College of Surgeons in Ireland (RCSI), Ireland*

Ahjoku Amadi-Obi, *The Royal College of Surgeons in Ireland (RCSI), Ireland*

Nikolaos Vassilas, *Head of Computer Programming Sector, Dpt., of Informatics, ATEI of Athens*

MHDW2014

3rd Mining Humanistic Data Workshop

The abundance of available data that is retrieved from or is related to the areas of Humanities and the human condition challenges the research community in processing and analyzing it. The aim is two-fold: on the one hand, to extract knowledge that will help understand human behavior, creativity, way of thinking, reasoning, learning, decision making, socializing and even biological processes; on the other hand, to exploit the extracted knowledge by incorporating it into intelligent systems that will support humans in their everyday activities.

The nature of humanistic data can be multimodal, semantically heterogeneous, dynamic, time and space-dependent, and highly complicated. Translating humanistic information, e.g. behavior, state of mind, artistic creation, linguistic utterance, learning and genomic information into numerical or categorical low-level data is a significant challenge on its own. New techniques, appropriate to deal with this type of data, need to be proposed and existing ones adapted to its special characteristics.

The workshop aims to bring together interdisciplinary approaches that focus on the application of innovative as well as existing data matching, fusion and mining and knowledge discovery and management techniques (like decision rules, decision trees, association rules, ontologies and alignments, clustering, filtering, learning, classifier systems, neural networks, support vector machines, preprocessing, post processing, feature selection, visualization techniques) to data derived from all areas of Humanistic Sciences, e.g. linguistic, historical, behavioral, psychological, artistic, musical, educational, social etc., Ubiquitous Computing and Bioinformatics.

Ubiquitous Computing applications (aka Pervasive Computing, Mobile Computing, Ambient Intelligence, etc.) collect large volumes of usually heterogeneous data in order to effect adaptation, learning and in general context awareness. Data matching, fusion and mining techniques are necessary to ensure human centred application functionality.

An important aspect of humanistics centers around managing, processing and computationally analyzing Biological and Biomedical data. Hence, one of the aims of this workshop will be to also attract researchers that are interested in designing, developing and applying efficient data and text mining techniques for discovering the underlying knowledge existing in Biomedical data, such as sequences, gene expressions and pathways.

The workshop topics include but are not limited to:

Humanistic Data Collection and Interpretation
Data pre-processing
Feature Selection
Supervised learning of humanistic knowledge
Clustering
Fuzzy modeling
Heterogeneous data fusion
Knowledge Representation and Reasoning
Linguistic Data Mining
Historical Research
Educational Data Mining
Music Information Retrieval
Data-driven Profiling/ Personalization
User Modeling
Behavior Prediction

Recommender Systems
Web Sentiment Analysis
Social Data Mining
Visualization techniques
Integration of data mining results into real-world applications with humanistic context
Ontologies, ontology matching and alignment
Mining Humanistic Data in the Cloud
Game Data Mining
Virtual-World Data Mining
Speech and Audio Data Processing
Data Mining Techniques for Knowledge Discovery
Biomedical Data Mining
Protein structure prediction

Workshop Chairs
Katia Lida Kermanidis, *Department of Informatics, Ionian University, Greece*
Christos Makris, *University of Patras, Greece*
Spyros Sioutas, *Department of Informatics, Ionian University, Greece*
Giannis Tzimas, *Technological Educational Institute of Western Greece, Greece*

Workshop Program Committee
John Garofalakis, *University of Patras, Greece*
Ioannis Hatzilygeroudis, *University of Patras, Greece*
Seferina Mavroudi, *Technological Educational Institute of Patras,Greece*
Vasilis Megalooikonomou, *University of Patras, Greece*
Phivos Mylonas, *Department of Informatics, Ionian University, Greece*
Konstantinos Poulas, *University of Patras, Greece*
Evangelos Theodoridis, *University of Patras, Greece*

Website and Advertising chairs
Ioannis Karydis, *Ionian University, Greece*
Emmanouil Viennas, *University of Patras, Greece*

Workshop's website
http://mhdw.org/2014/

MT4BD2014

New Methods and Tools for Big Data

The provision of large amount of data from various sources (Internet, Social Media, Application Logs, Data Warehouses, Sensors, Mobiles, Open Data, etc.) is now emerging the collection and processing of "Big Data". While Big Data notion is adopted from both academic and enterprise communities, there is currently a wide gap between its potential and its realization. Variety, velocity, scale, complexity, interpretation and security problems with Big Data raise challenges at all phases of the pipeline that can extract information and knowledge from it. Thus, there is a natural interest in using these data asset to improve a variety of applications. It is very interesting to explore how the researchers utilize data-driven strategies and discover what disciplines will charge because of the advent of data. With the vast amount of data now available modern business are facing with the challenges of storage, management, analysis, privacy, visualization, security and data integration.

The aim of this workshop is to serve as an interdisciplinary forum for bringing together specialists from the scientific areas of Computer Engineering, Finance and Operational Research. The focus of this workshop is on current technological advances and challenges about the development of big data-driven algorithms and methods and tools. Furthermore, it would be very interesting to investigate if the use of a vast amount of data leads to more accurate models or not.

Therefore, the Workshop on "New Methods and Tools for Big Data (MT-4BD-2014)" will welcome paper submissions introducing and implementing methods and tools to address various algorithms and methods for processing, modeling and mining of big data and applications. This workshop will provide a forum for the exchange of ideas between theoreticians and practitioners. Topics of interest include, but are not limited to, the following new techniques and applications relevant to the big data topic:

Big Data Analytics
Business intelligence and analytics
Interactive Visualisation Technologies and Visual Analytics
Personalization
Semantics
Data mining
Human Collaboration (crowdsoursing)

Tools and Applications
E-commerce
E-learning
Smart Health and Wellbeing
Smart Cities
Sensors Networks
Industrial Automation
Systems Biology and Bioinformatics
Geoinformatics
Financial Forecasting and Trading
Security

Big Data Architectures and Frameworks
Cloud computing
Grid computing
Data storage and processing frameworks
Security and privacy

Workshop Program Committee
Spiros Likothanassis, *University of Patras, Greece*
Dimitris Tzovaras, *CERTH/ITI, Greece*
Eero Hyvönen, *Aalto University, Finland*
Jörn Kohlhammer, *Fraunhofer-Institut für Graphische Datenverarbeitung IGD, Germany*
George Pavlidis, *University of Patras, Greece*
Konstantinos Theofilatos, *University of Patras, Greece*
Konstantinos Votis, *CERTH/ITI, Greece*
Dimitrios Kotsomitropoulos, *University of Patras, Greece*
Christos Alexakos, *University of Patras, Greece*

Workshop's website
http://mt4bd2014.ceid.upatras.gr

MT4BD2014 **Keynote** by **DimitriosTzovaras**   SUN**21** 15:30

Dr. Dimitrios Tzovaras, *is a Senior Researcher (Researcher A') and the Director of the Information Technologies Institute (ITI), at the Centre for Research and Technology Hellas (CERTH). His main research interests include visual analytics, 3D object recognition, search and retrieval, behavioral biometrics, assistive technologies, information and knowledge management, multimodal interfaces, computer graphics and virtual reality. His involvement with those research areas has led to the co-authoring of over 80 articles in refereed journals and more than 150 papers in international conferences. Since 1992, Dr. Tzovaras has been involved in more than 60 projects funded by the EC and the Greek Ministry of Research and technology. He has also served as served a regular reviewer for a number of international journals and conferences. He is a member of IEEE and EURASIP.*

## Visual Analytics Technologies for the Efficient Processing and Analysis of Big Data

Nowadays, there is a vast amount of data produced on daily basis from a great variety of sources, ranging from personal multimedia sensors to big health related datasets and network events. The issue of being able to analyse them in reasonable time, to comprehensively present them and generally to process them in an efficient manner regardless their eventual application is most commonly referred to as the "Big Data" issue and forms a great challenge to the research society. As a consequence, any technology, that claims to overcome the information overload problem, has to provide answers for the following questions (a) Who or what defines the relevance of information" for a given task, (b) How can appropriate procedures in a complex decision making process be identified (c) How can the information be presented in a decision- or task-oriented way (d)Which types of interaction can facilitate problem solving and decision making.

The goal of visual analytics research is to turn the information overload into an opportunity by enabling decision-makers to examine this massive amount of information to make effective decisions. Visual analytics enables people to find hidden relations and to turn the data into useful and defensible knowledge. In this respect, the current presentation, held by Dr.DimitriosTzovaras, aims to revisit the latest achievements of the Visual Analytics, Virtual & Augmented Reality Laboratory of CERTH/ITI in the field of Big Data Analysis. In particular, by relying on advanced visual analytics, by extending Graph-based approaches and by utilizing beyond state-of-the-art methods for significant dimensionality reduction of the solution domain (i.e. pareto-front), efficient solutions have been proposed and evaluated for several Big Data related applications. Such applications included but are not limited to: internet and telecommunication networks security, multimedia search engines, road traffic management and prediction, as well as pattern detection in large health databases (i.e. DNA sequences).

AIAI 2014

10th International Conference on Artificial Intelligence Applications and Innovation
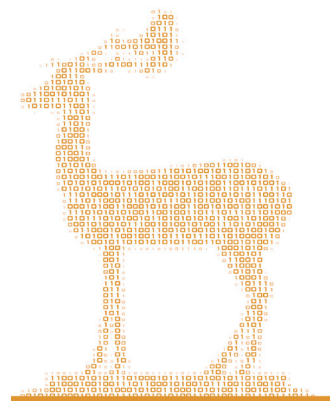
FRI19

Time	Room A	Room B
08:30-09:00	REGISTRATION	
09:00-10:00	GREETINGS **KEYNOTE** BY **ADELI**	
10:00-11:20	SESSION 01 **LEL**	SESSION 02 **SMAAI**
11:20-12:00	COFFEE BREAK	
12:00-13:10	SESSION 03 **HY-CENV**	WORKSHOP **IIVC1**
13:10-14:10	LUNCH	
14:10-15:35	SESSION 04 **AGE**	SESSION 05 **CL-PR1**
15:35-16:00	COFFEE BREAK	
16:00-17:00	WORKSHOP **MHDW1**	WORKSHOP **COPA1**
17:00-18:00	SESSION 06 **GEN**	WORKSHOP **COPA2**
	↑ ROOM **A**	↑ ROOM **B**
19:30	WELCOME RECEPTION	

SAT20

Time	Room A	Room B
08:30-09:00	REGISTRATION	
09:00-10:00	**KEYNOTE** BY **ANGELOV**	
10:00-11:30	SESSION 07 **IMVIP1**	SESSION 08 **FEAT-EX**
11:30-12:00	COFFEE BREAK	
12:00-13:20	SESSION 09 **ENVAI**	SESSION 10 **SIMFZ**
13:20-14:30	LUNCH	
14:30-15:45	WORKSHOP **MHDW2**	WORKSHOP **MT4BD**
15:45-16:15	COFFEE BREAK	
16:15-17:40	SESSION 11 **CL-PR2**	SESSION 12 **DMN-FOR**
	↑ ROOM **A**	↑ ROOM **B**
21:00	GALA DINNER	

SUN21

Time	Room A	Room B
08:30-09:00	REGISTRATION	
09:00-10:00	**KEYNOTE** BY **DILLON**	
10:00-11:30	SESSION 13 **APP-MOB**	SESSION 14 **GEN-HE**
11:30-12:00	COFFEE BREAK	
12:00-13:30	WORKSHOP **MHDW3**	
13:30-14:30	LUNCH	
14:30-15:30	WORKSHOP **IIVC2**	SESSION 15 **IMVIP2+PR3**
15:30-16:30	WORKSHOP **MT4BD** **KEYNOTE** BY **TZOVARAS**	
	↑ ROOM **A**	↑ ROOM **B**
17:30	WALKING TOUR TO THE MEDIEVAL TOWN OF RHODES AND VISIT TO THE PALACE OF THE GRANT MAGISTRUS	

CONFERENCE ROOMS

KEYNOTES ROOM **A**

↑ ROOM **A**   ↑ ROOM **B**

19-21
September
Greece
Rhodes
Paradise Mare
Aldemar Luxury
http://delab.csd.auth.gr/aiai2014/

*Full Papers are assigned 20 minutes, Short Papers are assigned 15 minutes, Workshop Papers are assigned 15 minutes

08:30
↓
09:00

Registration

Room**A**

09:00
↓
10:00

KEYNOTE
1

Multi-Paradigm Computational Intelligence Models for EEG-based Diagnosis of Neurological and Psychiatric Disorders
Hojjat Adeli

Chair **Tharam Dillon**

10:00
↓
11:20

SESSION
01

Learning-ensemble Learning (LEL)

Chair **Petr Hajek**   Room**A**

Yiannis Kokkinos and **Konstantinos Margaritis**
  Breaking Ties of Plurality Voting in Ensembles of Distributed Neural Network Classifiers Using Soft Max Accumulations (full)

Petr Hajek and Vladimir Olej
  Predicting Firms' Credit Ratings Using Ensembles of Artificial Immune Systems and Machine Learning – an Over-Sampling Approach (full)*

Jin Zhang
  Automating Transition Functions: a Way to Improve Trading Profits with Recurrent Reinforcement Learning (full)

Mohamed Abou-Zleikha, Zeng-Hua Tan, Mads Græsbøll Christensen and **Søren Holdt Jensen**
  Utilising Tree-Based Ensemble Learning for Speaker Segmentation (full)

Social Media & Mobile Applications of AI (SMAAI)

Room**B**   *Chair* **Katia Linda Kermanidis**

10:00
↓
11:20

SESSION
02

Dimitrios Kravvaris and **Katia Lida Kermanidis**
  Speakers' Language Characteristics Analysis of Online Educational Videos (full)

Ilias Maglogiannis, Charalampos Ioannou, George Spyroglou and **Panayiotis Tsanakas**
  Fall Detection Using Commodity Smart Watch and Smart Phone (full)

Eleanna Kafeza, Andreas Kanavos, Christos Makris and **Pantelis Vikatos**
  Predicting Information Diffusion Patterns in Twitter (full)

Francesco Trovo and **Manuel Roveri**
  An Ensemble of HMMs for Cognitive Fault Detection in Distributed Sensor Networks (full)

11:20
↓
12:00

Coffee break

12:00
↓
13:10

SESSION
03

Hybrid - Changing Environments (HY-CENV)

Chair **Christos Makris**   Room**A**

Sotirios Chatzis and **Dimitrios Kosmopoulos**
  A Partially-Observable Markov Decision Process for Dealing with Dynamically Changing Environments (full)

IIVC1 Workshop Session

Room**B**   *Chair* **Ioannis Stephanakis**

12:00
↓
13:10

IIVC
1

Ioannis Chochliouros, Anastasia Spiliopoulou, Ioannis Stephanakis, Evangelos Sfakianakis, Kelly Georgiadou, Maria Belesioti, Luis Cordeiro and **Joao Goncalves**
  Modern Video-to-Video Communications to Enhance Citizens' Quality of Life and Create Opportunities for Growth in "Smart" European Cities

SESSION 03

IIVC 1

Room**A**

Sergi Canyameres Masip and **Doina Logofatu**
Platform for Simulation and Improvement of Swarm Behavior in Changing Environments (short)*

Jacek Mańdziuk, Aleksandra Wozniczko and **Marcin Goss**
A Neuro-memetic System for Music Composing (short)

Room**B**

Ioannis Stephanakis, Ioannis Chochliouros, George Lymperopoulos and **Kostas Berberidis**
Optimal Video Delivery in Mobile Networks Using A Cache-Accelerated Multi Area eMBMS Architecture

Panagiotis Diamantopoulos, Nikolaos Bompetsis, Eleni Patouni, Luis Cordeiro, Joao Goncalves, Ioannis Chochliouros, George Lyberopoulos and **Nancy Alonistioti**
E-health Solutions Using Video-to-Video Communications

Bibiana Metelmann, Camilla Metelmann, Konrad Meissner, Michael Wendt, Joao Goncalves, Peadar Gilligan, Ahjoku Amadi-Obi, Donal Morris, Eleni Patouni and **Martin von der Heyden**
The Potential of Telemedicine

13:10
↓
14:10

Lunch

14:10
↓
15:35

SESSION 04

Agents (AGE)

Chair **Nikolaos Spanoudakis**

Room**A**

Armin Ghasem Azar, Mansoor Davoodi, Mohsen Afsharchi and **Bahram Sadeghi Bigham**
A Greedy Agent-based Resource Allocation in the Smart Electricity Markets (full)

Stephen Akuma, Chrisina Jayne, Rahat Iqbal and **Faiyaz Doctor**
Implicit Predictive Indicators: Mouse Activity and Dwell Time (short)

Eugénio Oliveira, Henrique Cardoso, Maria Joana Urbano and **Ana Paula Rocha**
Normative Monitoring of Agents to Build Trust in an Environment for B2B (short)

Georgios Papadimitriou, Nikolaos Spanoudakis and **Michail Lagoudakis**
Extending the Kouretes Statechart Editor for Generic Agent Behavior Development (short)

Marcio Mendonça, Esdras Salgado Da Silva, Karina Assolari Takano, Mauricio Iwama Takano and **Lúcia Valéria Ramos De Arruda**
Hierarchic Fuzzy Approach Applied in the Development of an Autonomous Architecture for Mobile Agents (short)

Classification Pattern Recognition 1 (CL-PR1)

14:10
↓
15:35

SESSION 05

Room**B**

Chair **Ioannis Stephanakis**

Arbab Masood Ahmad, Gul Muhammad Khan and **Sahibzada Ali Mahmud**
Classification of Mammograms Using Cartesian Genetic Programming Evolved Artificial Neural Networks (full)

Ugur Demir, Esam Ghaleb and **Hazım Kemal Ekenel**
A Face Recognition Based Multiplayer Mobile Game Application

Espérance Mwamikazi, Philippe Fournier-Viger, Chadia Moghrabi and **Robert Baudouin**
A Dynamic Questionnaire to Further Reduce Questions in Learning Style Assessment (full)

Isidoros Perikos, Epameinondas Ziakopoulos and **Ioannis Hatzilygeroudis**
Recognizing Emotions from Facial Expressions using Neural Network (full)

15:35
↓
16:00

Coffee break

MHDW1 Workshop Session

COPA1 Workshop Session

Chair **Giannis Tzimas**

Room**A**

Room**B**

Chair **Vladimir Vovk**

Polyxeni Sgouroglou and **Christos-Nikolaos Anagnostopoulos**
Modification of Colors in Images for Enhancing the Visual Perception of Protanopes

Manolis Maragoudakis, Katia Lida Kermanidis and **Spyros Vosinakis**
Extracting Knowledge from Collaboratively Annotated Ad Video Content

Zafeiria-Marina Ioannou, Nikolaos Nodarakis, Spyros Sioutas, Giannis Tzimas and **Athanasios Tsakalidis**
Mining Biological Data on the Cloud - a MapReduce Approach

Costas S. Iliopoulos and **Manal Mohamed**
On-Line Minimum Closed Covers

Vladimir Vovk, Ivan Petej and **Valentina Fedorova**
From Conformal to Probabilistic Prediction

Lars Carlsson, Martin Eklund and **Ulf Norinder**
Aggregated Conformal Prediction

Harris Papadopoulos
A Cross-Conformal Predictor for Multi-label Classification

Chenzhe Zhou, Ilia Nouretdinov, Zhiyuan Luo and **Alexander Gammerman**
SVM Venn Machine with k-Means Clustering

Genetic Algorithms (GEN)

COPA2 Workshop Session

Chair **George Anastassopoulos**

Room**A**

Room**B**

Chair **Alexander Gammerman**

Jawad Ali, Gul Muhammad Khan and **Sahibzada Ali Mahmud**
Enhancing Growth Curve Approach using CGPANN for Predicting the Sustainability of New Food Products (full)

Junpeng Bao, Yuepeng Zhang, Wenqing Wang and **Jun Zeng**
DX-IFD: an Intelligent Force Deployment System (full)

David Griol, Jose Antonio Iglesias, Agapito Ledezma and **Araceli Sanchis**
A Practical Application of Evolving Fuzzy-rule-based Classifiers for the Development of Spoken Dialog Systems (short)

Henrik Linusson, Ulf Johansson, Henrik Boström and **Tuve Löfström**
Efficiency Comparison of Unstable Transductive and Inductive Conformal Classifiers

James Smith, Ilia Nouretdinov, Rachel Craddock, Charles Offer and **Alexander Gammerman**
Anomaly Detection of Trajectories with Kernel Density Estimation by Conformal Prediction

Ulf Johansson, Rikard König, Henrik Linusson, Tuve Löfström and **Henrik Boström**
Rule Extraction with Guaranteed Fidelity

Ilia Nouretdinov
Conformal Prediction under Probabilistic Input

Welcome Reception

SATURDAY**20**

Registration

RoomA

Autonomous Learning Systems: Association-based Learning

Plamen Angelov

Chair **Hojjat Adeli**

Image – Video Processing (IMVIP)

Chair **Ilias Maglogiannis**

RoomA

Nicholas Michael and **Andreas Lanitis**
Model-Based Generation of Realistic 3D Full Body Avatars from Uncalibrated Multi-View Photographs (full)

Christos Mousas, Paul Newbury and **Christos-Nikolaos Anagnostopoulos**
Data-Driven Motion Reconstruction Using Local Regression Models (full)

Kostas Delibasis, Spiros Georgakopoulos, Vassilis Plagianakos and **Ilias Maglogiannis**
Calculation of Complex Zernike Moments with Geodesic Correction for Pose Recognition in Omni-directional Images (full)

Olga Baklanova, Olga Shvets and **Zhanbai Uzdenbaev**
Automation System Development for Micrograph Recognition for Mineral Ore Composition Evaluation in Mining Industry (short)

Feature Extraction (FEAT-EX)

RoomB
Chair **Manolis Maragoudakis**

Gildardo Lozano-Vega, Yannick Benezeth, Franck Marzani and **Frank Boochs**
Analysis of Relevant Features for Pollen Classification (full)

Piotr Sobolewski and **Michał Woźniak**
Identifying Features with Concept Drift in Multidimensional Data Using Statistical Tests (full)

Umer Khayam, Durr-E- Nayab, Gul Muhammad Khan and **Sahibzada Ali Mehmud**
Features Extraction of Growth Trend in Social websites using Non-Linear Genetic Programming (short)

Coffee break

Environmental AI (ENVAI)

Chair **Vladimir Olej**

RoomA

Lazaros Iliadis, Ilias Bougoudis and **Stephanos Spartalis**
Comparison of Self Organizing Maps Clustering with Supervised Classification for Air Pollution Data Sets (full)

Simulations and Fuzzy Modeling (SIMFZ)

RoomB
Chair **Engin Yesil**

Agustín Jiménez, Basil Al-Hadithi, Juan Pérez-Oria and **Luciano Alonso**
Optimal Control Using Feedback Linearization for a Generalized T-S Model (full)

SESSION 03

Jonne Pohjankukka, Paavo Nevalainen, Tapio Pahikkala, Eija Hyvönen, Pekka Hänninen, Raimo Sutinen, Jari Ala-Ilomäki and **Jukka Heikkonen**
Predicting Water Permeability of the Soil Based on Open Data (full)

Petros-Fotios Alvanitopoulos, Ioannis Andreadis, Nikolaos Georgoulas, Michalis Zervakis and **Nikolaos Nikolaidis**
Solar Radiation Time-series Prediction Based on Empirical Mode Decomposition and Artificial Neural Networks (short)

Mehreen Rehman, Jawad Ali, Gul Muhammad Khan and **Ali Mahmud Sahibzada**
Extracting Trend Ensembles in Solar Irradiance for Green Energy Generation Using Neuro-Evolution (short)

SESSION 10

Eleni Vrochidou, Peter Alvanitopoulos, Ioannis Andreadis, Anaxagoras Elenas and **Katerina Mallousi**
HHT-Based Artificial Seismic Accelerograms Generation (full)

Engin Yesil, Tufan Kumbasar, M. Furkan Dodurka and **Ahmet Sakalli**
Peak Observer Based Self-tuning of Type-2 Fuzzy PID Controllers (full)

Jacek Kabziński and **Jarosław Kacerka**
TSK Fuzzy Modeling with Nonlinear Consequences (full)

13:20 ↓ 14:30 | Lunch

14:30 ↓ 15:45 **MHDW 2** | MHDW2 Workshop Session

14:30 ↓ 15:45 **MT4BD** | MT4BD Workshop Session

Chair **Spyros Sioutas**

Room**A**

Xenophon Evangelopoulos, Christos Makris and **Yannis Plegas**
Reciprocal Rank using Web Page Popularity

Evaggelos Spyrou and **Phivos Mylonas**
A Survey of Geo-tagged Multimedia Content Analysis within Flickr

Fotis Psomopoulos and **Pericles Mitkas**
Algebraic Interpretations towards Clustering Protein Homology Data

Olga Politi, Iosif Mporas and **Vasileios Megalooikonomou**
Comparative Evaluation of Feature Extraction Methods for Human Motion Detection

Dimitrios Triantafyllopoulos and **Vasileios Megalooikonomou**
Eye Blink Artifact Removal in EEG Using Tensor Decomposition

Room**B**

Chair **Dimitrios Tzovaras**

Kalle Tomingas, Tanel Tammet and **Margus Kliimask**
Rule-based Impact Analysis for Enterprise Business Intelligence

Stavros Papadopoulos, Konstantinos Votis, Christos Alexakos and **Dimitrios Tzovaras**
Feature Extraction and Visual Feature Fusion for the Detection of Concurrent Prefix Hijacks

Katerina Kalou and **Dimitrios Koutsomitropoulos**
Linking Data in the Insurance Sector: a Case Study

Votis Konstantinos, Yiannis Karras, Jörn Kohlhammer, Steiger Martin, Dimitrios Tzovaras and **Elias Gounopoulos**
Enhanced Visual Analytics Services for the Optimal Planning of Renewable Energy Resources Installations

Thomas Amorgianiotis, Konstantinos Theofilatos, Sovan Mitra, Efstratios F. Georgopoulos and **Spiros Likothanassis**
Integrating High Volume Financial Datasets to Achieve Profitable and Interpretable Short Term Trading with the FTSE100 Index

---

15:45 ↓ 16:15 | Coffee break

Classification Pattern Recognition 2 (CL-PR2)

Chair **Harris Papadopoulos**

Room**A**

Ladislav Lenc and **Pavel Král**
Automatically Detected Feature Positions for LBP based Face Recognition (full)

Alexey Potapov, Vita Batishcheva and **Maxim Peterson**
Limited Generalization Capabilities of Autoencoders with Logistic Regression on Training Sets of Small Sizes (short)

Antonio García-Manso, Carlos J. García-Orellana, Rafael Tormo-Molina, Ramón Gallardo-Caballero Miguel Macias and **Horacio M. Gonzalez**
Semi-automatic Measure and Identification of Allergenic Airborne Pollen (short)

Data Mining-Forecasting (DMN-FOR)

Room**B**

Chair **Ergina Kavallieratou**

Christos Makris and **Michael Angelos Simos**
Novel Techniques for Text Annotation with Wikipedia Entities (full)

Juhyun Oh, Seonggyu Jeon, Minho Kim, Hyukchul Kwon and **Iktae Kim**
An Avatar-Based Weather Forecast Sign Language System for the Hearing-Impaired (short)

Velislava Stoykova
Interpretation of Possessive and Reflexive-possessive Pronouns of Bulgarian Language in DATR (short)

Kolyo Onkov and **Georgios Tegos**
Forecasting Algorithm Adaptive Automatically to Time Series Length (short)

Andreas Kanavos, Isidoros Perikos, Pantelis Vikatos, Ioannis Hatzilygeroudis, Christos Makris and **Athanasios Tsakalidis**
Modeling ReTweet Diffusion Using Emotional Content (full)

21:00 Gala Dinner

08:30
↓
09:00

Registration

09:00
↓
10:00

KEYNOTE
3

Room**A**

Conjoint Mining of Data and Content with Applications in Business, Bio-medicine, Transport Logistics and Electrical Power Systems

Tharam Dillon

Chair **Plamen Angelov**

10:00
↓
11:30

SESSION
13

AI Applications-Mobile Applications (APP-MOB)

Chair **Konstantinos Moustakas**   Room**A**

Konstantinos Moustakas
Six Degrees of Freedom Implicit Haptic Rendering (short)

Xanthoula Eirini Pantazi, Dimitrios Moshou, Abdul Mounem Mouazen, Boyan Kuang and **Thomas Alexandridis**
Application of Supervised Self Organizing Models for Wheat Yield Prediction (short)

Dimitrios Galiatsatos, George Anastassopoulos, Georgios Drosos, Athanasios Ververidis, Konstantinos Tilkeridis and **Konstantinos Kazakos**
Prediction of 30-day Mortality after a Hip Fracture Surgery Using Neural and Bayesian Networks (short)

Ramin Amali, Samson Cooper and **Siamak Noroozi**
Application of Artificial Neural Network to Predict Static Loads on an Aircraft Rib (short)

Paraskevas Diamantatos and **Ergina Kavallieratou**
Android Based Electronic Travel Aid System for Blind People (short)

10:00
↓
11:30

SESSION
14

Genetic Algorithms-Heuristics (GEN-HE)

Room**B**   *Chair* **Georgios Dounias**

Josef Hynek
Sequence Matching Genetic Algorithm for Square Jigsaw Puzzles (short)

Doina Logofatu and **Daniel Stamate**
Scalable Distributed Genetic Algorithm for Data Ordering Problem with Inversion Using MapReduce (short)

Christos Kyriklidis and **Georgios Dounias**
Application of Evolutionary Algorithms in Project Management (short)

David Lehký, Ondřej Slowik and **Drahomír Novák**
Inverse Reliability Task: Artificial Neural Networks and Reliability-based Optimization Approaches (short)

Yosra Acodad, Amine Benamrane, Imade Bnnelallam and **El Houssine Bouyakhf**
Profound Degree: a Conservative Heuristic to Repair Dynamic CSPs (short)

11:30
↓
12:00

Coffee break

12:00
↓
13:30

MHDW
3
↓

MHDW3 Workshop Session

Chair **Katia Lida Kermanidis**   Room**A**

Dimos Makris, Katia Lida Kermanidis and Ioannis Karydis
The Greek Audio Dataset

Amine Chohra, Kurosh Madani and Aziza Chohra
Affect in Complex Decision-Making Systems: from Psychology to Computer Science Perspectives

MHDW
3

Room**A**

Gerasimos Razis and **Ioannis Anagnostopoulos**
InfluenceTracker: Rating the Impact of a Twitter Account

**Christos Dimitrakopoulos, Andreas Dimitris Vlantis,
Konstantinos Theofilatos, Spiros Likothanassis** and **Seferina Mavroudi**
*A New Framework for Bridging the Gap from Protein-Protein Interactions to
Biological Process Interactions*

Oksana Kalita and **Georgios Pavlidis**
*Adjusting the Tests According to the Perception of Greek Students Who are
Taught Russian Motion Verbs via Distance Learning*

Victor Giannakouris-Salalidis, Antonia Plerou and **Spyros Sioutas**
CSMR: a Scalable Algorithm for Text Clustering with Cosine Similarity and MapReduce

13:30
↓
14:30

Lunch

14:30
↓
15:30

IIVC
2

IIVC2 Workshop Session

Chair **Ioannis Chochliouros**

Room**A**

**Joao Goncalves, David Palma, Luis Cordeiro, Sachin Sharma, Didier Colle,
Adam Carter** and **Paulo Simoes**
*Software-Defined Networking: Guidelines for Experimentation and Validation in
Large-Scale Real World Scenarios*

**Dimitrios Alonistiotis, Evgenia Kontou, Nikolaos Karachalios,
Panagiotis Diamantopoulos, Nikolaos Bompetsis, Eleni Patouni,
Nancy Alonistioti** and **Ioannis P. Chochliouros**
Remote Video-to-Video Eye Telemonitoring Use Case for Glaucoma Patients

Dimitrios Charalambidis
*ICT in the Future Classrooms and Teaching: Preparing the Knowledge Workers of
the 21st Century*

Andreea Molnar, Vishanth Weerakkody and **Ahlam Almuwil**
*Promoting ICT Skills through Online Services: Case Study of Video Use for Adult
Education in Municipalities*

Room**A**

15:30
↓
16:30

KEYNOTE
MT4BD

Visual Analytics Technologies for the Efficient Processing
and Analysis of Big Data

Dimitrios Tzovaras

Chair **Spiros Likothanasis**

14:30
↓
15:50

SESSION
15

Image Video Processing 2 (IMVP2) - Pattern Recognition 3 (PR3)

Room**B**

Chair **George Tsekouras**

George Tsekouras
*Shoreline Extraction from Coastal Images Using Chebyshev Polynomials and
RBF Neural Networks (short)*

Rudolf Schraml and **Andreas Uhl**
Similarity Based Cross-section Segmentation in Rough Log End Images (short)

Stefan Jenisch and **Andreas Uhl**
Visual Security Evaluation Based on SIFT Object Recognition (short)

Konstantina Kottari, Kostas Delibasis, Vassilis Plagianakos
and **Ilias Maglogiannis**
*Fisheye Camera Video Processing and Trajectory Estimation Using 3D Human
Models (full)*

Morten Goodwin and Anis Yazidi
*A Pattern Recognition Approach for Peak Prediction of Electrical Consumption
(short)*

17:30

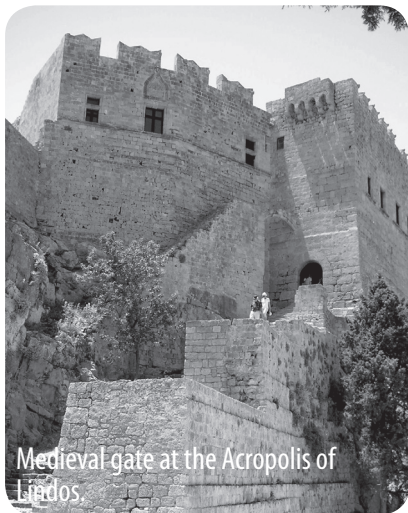Walking tour to the medieval town of Rhodes
and visit to the Palace of the Grant Magistrus

Friday 19/9, 19:30, **Welcome Reception**
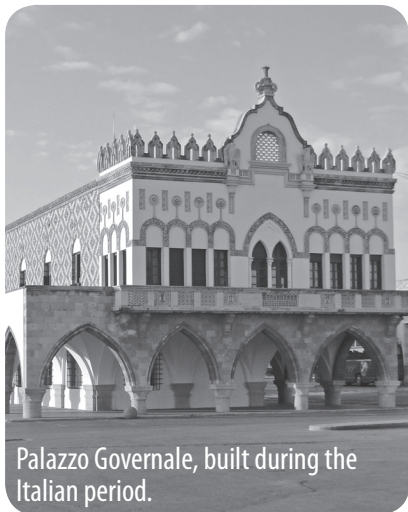
Saturday 20/9, 21:00, **Gala Dinner**

Sunday 21/9, 17:30, **Walking tour to the medieval town of Rhodes and visit to the Palace of the Grant Magistrus**
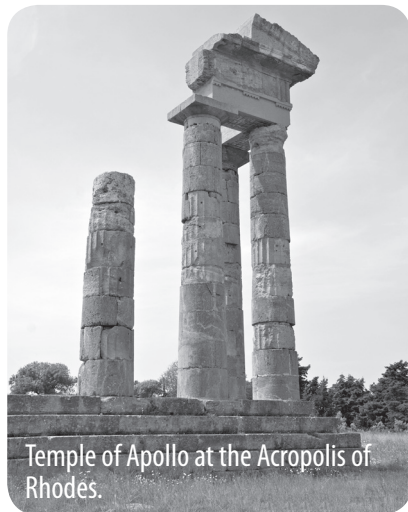

Medieval gate at the Acropolis of Lindos.

St Paul's Bay.

Palazzo Governale, built during the Italian period.

Temple of Apollo at the Acropolis of Rhodes.

Airport

Paradise Mare

Paradise Mare

©2014 Google Maps

CITYINFO

Conference Venue

Aldemar Paradise Village
Main Street, Kallithea, 851 00 Rhodes
http://www.aldemar-resorts.gr/EN/Family%20resorts/Paradise%20village/

Emergency numbers

Police 100   •   Fire brigade 199   •   Ambulance 166

Telephone directory enquiries

Local 11888

Taxi Companies

Radiotaxi (in Rhodes Town) +30 22410 69800
Radiotaxi (out of Rhodes Town) +30 22410 69600
Diagoras +30 22410 66555

Rhodes Airport

Phone Centre +30 22410 88700, 88701

Municipality of Rhodes Department of Tourism

3, Averof, 851 00 Rhodes
Tel: +30 22410 35240, 35945

Greek National Tourism Organisation (EOT)

1, Ethnarhou Makariou Street and Papagou Street, 851 00 Rhodes
Phone center +30 22410 44333
Information: 171 (applicable inside Greece)

Tourist Police

1, Ethnarhou Makariou Street and Papagou Street, 851 00 Rhodes
Phone center +30 22410 27423
Information: 171 (applicable inside Greece)