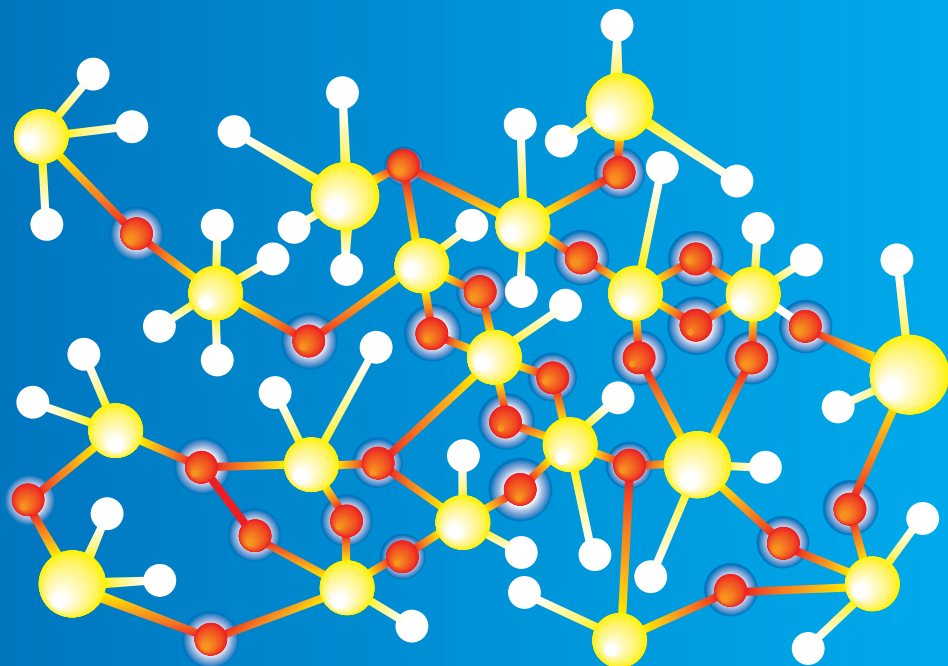


EANN2013

14th International Conference on Engineering Applications of Neural Networks



13-16 program
September
Halkidiki **Greece**

Preface	3
Organization - Executive and Program Committees	5
Keynotes Lectures	8
Tutorial	11
Workshops	12
Program at a glance	18
Analytical Program	20
Thursday 12 th of September 2013	20
Friday 13 th	20
Saturday 14 th	24
Sunday 15 th	29
Monday 16 th	33
General Conference Information	34

Artificial Intelligence is a branch of computer science, continuously and rapidly evolving. It is a fact that more and more sophisticated modeling techniques are published in the literature all the time, capable of tackling complicated and challenging problems. Artificial Neural Networks (ANN) and other Soft Computing approaches seek inspiration from the world of biology to enable the development of real world intelligent systems.

It is a fact that EANN is a well established event with a very long and successful history. Eighteen years have passed since the first organization in Otaniemi Finland, in 1995. For the following years it has a continuous and dynamic presence as a major European scientific event. An important milestone is year 2009, when its guidance by a steering committee of the INNS (*EANN Special Interest Group*) was initiated. Thus, from that moment the conference has been continuously supported technically, by the International Neural Network Society (INNS).

This volume contains the papers that were accepted to be presented orally at the 14th EANN conference and its satellite workshops. This volume belongs to the CCIS Springer Series. The event was held (13th-16th of September) in the "Athina Pallas" Resort and Conference center in Halkidiki, Greece and was supported by the Aristotle University of Thessaloniki and the Democritus University of Thrace.

Three workshops on timely AI subjects were organized successfully and collocated with EANN'2013:

1. the 2nd Mining Humanistic Data (MHD) Workshop supported by the Ionian University and the University of Patras. We wish to express our gratitude to Professors *Spyros Sioutas* and *Christos Makris* for their common effort towards the organization of the 2nd MHD Workshop. Also we would like to thank Professors *Vassilios Verykios* of the Hellenic Open University, Greece and *Evaggelia Pitoura* of the University of Ioannina, Greece, for their keynote lectures in the MHD workshop.
2. the 3rd Computational Intelligence Applications in Bioinformatics (CIAB) Workshop supported by the University of Patras. We are grateful to Professor *Spyros Likothanasis* for his kind efforts towards the management of the CIAB Workshop and for his keynote lecture in the frame of this event.
3. the 1st Innovative European Policies and Applied Measures for Developing Smart Cities (IPMSC) Workshop, supported by the Hellenic Telecommunications Organization. The IPMSC was driven by the hard work of Drs. *Ioannis P. Chochliouros* and *Ioannis M. Stephanakis* (Hellenic Telecommunications Organization - OTE, Greece).

Three Keynote Speakers, Professors *Nikola Kasabov*, *Erkki Oja*, and *Marios Polycarpou*, were invited and they gave lectures in timely aspects of AI and ANN. Finally, an highly interesting tutorial entitled "Neural Networks for Digital Media Analysis and Description" was delivered by Assistant Professor *Anastasios Tefas* of the Aristotle University of Thessaloniki Greece. We wish to express our sincere thanks to our invited keynote speakers and Assistant Professor Tefas.

The diverse nature of papers presented, demonstrates the vitality of neural computing and related soft computing approaches and proves the very wide range of ANN applications as well. On the other hand, this volume contains basic research papers, presenting variations and extensions of several approaches.

The Organizing Committee was delighted by the overwhelming response to the call for papers. All papers have passed through a peer review process by at least 2 independent academic referees. Where needed a third referee was consulted to resolve any conflicts. Overall 40% of the submitted manuscripts (totally 91) were accepted to be presented in the EANN and in the three satellite workshops. The accepted papers of the 8th AIAI conference are related to the following thematic topics:

- Evolutionary Algorithms
- Adaptive Algorithms
- Control Approaches
- Soft Computing Applications
- ANN
- Ensembles
- Bioinformatics
- Classification
- Pattern Recognition
- Medical Applications of AI
- Fuzzy Inference
- Filtering
- SOM
- RBF
- Image – Video Analysis
- Learning
- Social Media Applications
- Community based Governance

The authors came from 28 different countries from all over Europe (e.g. Austria, Bulgaria, Cyprus, Czech Republic, Finland, France, Germany, Greece, Holland, Italy, Poland, Portugal, Slovakia, Slovenia, Spain, UK, Ukraine, Russia, Romania, Serbia), Americas (e.g. Brazil, USA, Mexico), Asia (e.g., China, India, Iran, Pakistan.), Africa (e.g. Egypt, Tunisia, Algeria) and Oceania (New Zealand).

We hope that these proceedings will help researchers worldwide to understand and to be aware of new ANN aspects. We do believe that they will be of major interest for scientists over the globe and that they will stimulate further research in the domain of Artificial Neural Networks and AI in general.

September 2013

Lazaros Iliadis, Harris Papadopoulos, Chrisina Jayne

Organization

Executive Committee

General chair	Konstantinos Margaritis, <i>University of Macedonia, Greece</i>
Advisory chairs	Nikola Kasabov, <i>Auckland University of Technology, New Zealand</i> Vera Kurkova, <i>Czech Academy of Sciences, Czech Republic</i> Mikko Kolehmainen, <i>University of Eastern Finland, Finland</i>
Honorary chair	Dominic Palmer Brown, <i>London Metropolitan University, UK</i>
Program Committee co-chairs	Lazaros Iliadis, <i>Democritus University of Thrace, Greece</i> Chrisina Jayne, <i>University of Coventry, UK</i> Haris Papadopoulos, <i>Frederick University, Cyprus</i>
Workshop chairs	Spyros Sioutas, <i>Ionian University, Greece</i> Christos Makris, <i>University of Patras, Greece</i>
Organizing chairs	Yannis Manolopoulos, <i>Aristotle University of Thessaloniki, Greece</i>
Web chair	Ioannis Karydis, <i>Ionian University, Greece</i>

Program Committee

Members	
	Athanasios Alexiou, <i>Ionian University, Greece</i>
	Luciano Alonso Renteria, <i>Universidad de Cantabria, Spain</i>
	Georgios Anastasopoulos, <i>Democritus University of Thrace, Greece</i>
	Ioannis Andreadis, <i>Democritus University of Thrace, Greece</i>
	Andreas Andreou, <i>University of Cyprus, Cyprus</i>
	Costin Badica, <i>University of Craiova, Romania</i>
	Zorana Bankovic, <i>Technical University of Madrid, Spain</i>
	Kostas Berberidis, <i>University of Patras, Greece</i>
	Nick Bessis, <i>University of Derby, UK</i>
	Monica Bianchini, <i>University of Siena, Italy</i>
	Ivo Bukovsky, <i>Czech Technical University in Prague, Czech Republic</i>
	George Caridakis, <i>National Technical University of Athens, Greece</i>
	Aristotelis Chatziioannou, <i>Institute of Biological Research & Biotechnology, NHRF, Greece</i>
	Javier Fernandez De Canete Rodriguez, <i>University of Malaga, Spain</i>
	Ruggero Donida Labati, <i>University of Milano, Italy</i>
	Anestis Fachantidis, <i>Aristotle University of Thessaloniki, Greece</i>
	Maurizio Fiasche, <i>Politecnico di Milano, Italy</i>
	Ignazio Gallo, <i>University of Insubria, Italy</i>
	Francisco Garcia, <i>University of Oviedo, Spain</i>
	Christos Georgiadis, <i>University of Macedonia, Greece</i>
	Efstratios F. Georgopoulos, <i>Technological Educational Institute of Kalamata, Greece</i>
	Giorgio Gnecco, <i>University of Genova, Italy</i>
	Petr Hajek, <i>University of Pardubice, Czech Republic</i>
	Ioannis Hatzilygeroudis, <i>University of Patras, Greece</i>
	Emmanouil Hourdakis, <i>Forthnet, Greece</i>
	Raul Jimenez Naharro, <i>Universidad de Huelva, Spain</i>
	Jacek Kabzinski, <i>Lodz University of Technology, Poland</i>
	Antonios Kalampakas, <i>Democritus University of Thrace, Greece</i>
	Ryotaro Kamimura, <i>Hiratsuka Kanagawa, Japan</i>
	Kostas Karatzas, <i>Aristotle University of Thessaloniki, Greece</i>
	Kostas Karpouzis, <i>National Technical University of Athens, Greece</i>
	Ioannis Karydis, <i>Ionian University, Greece</i>
	katia Kermanidis, <i>Ionian University, Greece</i>
	Kyriaki Kitikidou, <i>Democritus University of Thrace, Greece</i>
	Petia Koprinkova-Hristova, <i>Bulgarian Academy of Sciences, Bulgaria</i>
	Konstantinos Koutroumbas, <i>National Observatory of Athens, Greece</i>
	Paul Krause, <i>University of Surrey, UK</i>
	Pekka Kumpulainen, <i>Tampere University of Technology, Finland</i>
	Efthymoulos Kyriacou, <i>Frederick University, Cyprus</i>
	Sin Wee Lee, <i>University of East London, UK</i>
	Spyros Likothanasis, <i>University of Patras, Greece</i>
	Ilias Maglogiannis, <i>University of Piraeus, Greece</i>
	George Magoulas, <i>University of London, UK</i>
	Mario Malcangi, <i>University of Milano, Italy</i>
	Francesco Marcelloni, <i>University of Pisa, Italy</i>
	Avlonitis Markos, <i>Ionian University, Greece</i>
	Marisa Masvoula, <i>University of Athens, Greece</i>
	Nikolaos Mitianoudis, <i>Democritus University of Thrace, Greece</i>
	Haris Mouratidis, <i>University of East London, UK</i>
	Phivos Mylonas, <i>National Technical University of Athens, Greece</i>
	Nicoletta Nicolaou, <i>University of Cyprus, Cyprus</i>
	Vladimir Olej, <i>University of Pardubice, Czech Republic</i>
	Mihaela Oprea, <i>Universitatea Petrol-Gaze din Ploiesti, Romania</i>
	Ioannis Partalas, <i>Aristotle University of Thessaloniki, Greece</i>
	Daniel Perez, <i>University of Oviedo, Spain</i>
	Elias Pimenidis, <i>University of East London, UK</i>
	Jefferson Rodrigo de Souza, <i>Universidade de Sao Paulo, Brazil</i>
	Nick Ryman-Tubb, <i>University of Surrey, UK</i>
	Marcello Sanguineti, <i>University of Genova, Italy</i>
	Thomas Schack, <i>Bielefeld University, Germany</i>
	Christos Schizas, <i>University of Cyprus</i>
	Abe Shigeo, <i>Kobe University, Japan</i>
	Alexandros Sideridis, <i>Agricultural University of Athens, Greece</i>
	Luis Silva, <i>University of Aveiro, Portugal</i>
	Spyros Sioutas, <i>Ionian University, Greece</i>
	Stephanos Spartalis, <i>Democritus University of Thrace, Greece</i>
	Ioannis Stamelos, <i>Aristotle University of Thessaloniki, Greece</i>
	Kathleen Steinhofel, <i>King's College, UK</i>
	Ioannis Stephanakis, <i>Organization of Telecommunications, Greece</i>
	Tatiana Tambouratzis, <i>University of Piraeus, Greece</i>
	Panos Trahanias, <i>Forthnet, Greece</i>
	Thanos Tsadiras, <i>Aristotle University of Thessaloniki, Greece</i>
	Nicolas Tsapatsoulis, <i>Technical University of Cyprus, Cyprus</i>
	George Tsekouras, <i>University of Aegean, Greece</i>
	Aristeidis Tsitiridis, <i>University of Swansea, UK</i>
	Grigorios Tsoumakas, <i>Aristotle University of Thessaloniki, Greece</i>
	Nikolaos Vasilas, <i>Technological Educational Institute of Athens, Greece</i>
	Panayiotis Vlamos, <i>Ionian University, Greece</i>
	George Vouros, <i>University of Piraeus, Greece</i>
	Peter Weller, <i>City University, UK</i>
	Shigang Yue, <i>University of Lincoln, UK</i>
	Achilleas Zapranis, <i>University of Macedonia, Greece</i>
	Rodolfo Zunino, <i>University of Genova, Italy</i>

Keynote Lectures

Prof. Nikola Kasabov

Founding Director and Chief Scientist of the Knowledge Engineering and Discovery Research Institute (KEDRI), Chair of Knowledge Engineering at the School of Computing and Mathematical Sciences at Auckland University of Technology. Fellow of the Royal Society of New Zealand, Fellow of the New Zealand Computer Society and a Senior Member of IEEE.

Neurocomputing for Spatio/Spectro-Temporal Pattern Recognition and Early Event Prediction: Methods, Systems, Applications

Sunday, September 15
10:30 - 11:30

The talk presents a brief overview of contemporary methods for neurocomputation, including: evolving connections systems (ECOS) and evolving neuro-fuzzy systems [1]; evolving spiking neural networks (eSNN) [2-5]; evolutionary and neurogenetic systems [6]; quantum inspired evolutionary computation [7,8]; rule extraction from eSNN [9]. These methods are suitable for incremental adaptive, on-line learning from spatio-temporal data and for data mining. But the main focus of the talk is how they can learn to predict early the outcome of an input spatio-temporal pattern, before the whole pattern is entered in a system. This is demonstrated on several applications in bioinformatics, such as stroke occurrence prediction, and brain data modeling for brain-computer interfaces [10], on ecological and environmental modeling [11]. eSNN have proved superior for spatio-and spectro-temporal data analysis, modeling, pattern recognition and early event prediction as outcome of recognized patterns when partially presented. Future directions are discussed. Materials related to the lecture, such as papers, data and software systems can be found from www.kedri.aut.ac.nz and also from: www.theneucom.com and <http://ncs.ethz.ch/projects/evospike/>.

References

- [1] N.Kasabov (2007) *Evolving Connectionist Systems: The Knowledge Engineering Approach*, Springer, London (www.springer.de) (first edition published in 2002)
- [2] S.Wysocki, L.Benuskova, N.Kasabov, *Evolving Spiking Neural Networks for Audio-Visual Information Processing*, *Neural Networks*, vol 23, issue 7, pp 819-835, September 2010.
- [3] N.Kasabov, *To spike or not to spike: A probabilistic spiking neural model*, *Neural Networks*, 23, 1, 2010, 16-19.
- [4] Mohemmed,A., Schliebs,S., Kasabov,N.(2011),SPAN: Spike Pattern Association Neuron for Learning Spatio-Temporal Sequences, *Int. J. Neural Systems*, 2012.
- [5] Kasabov, N., Dhoble, K., Nuntalid, N., G. Indiveri, *Dynamic Evolving Spiking Neural Networks for On-line Spatio- and Spectro-Temporal Pattern Recognition*, *Neural Networks*, v.41, 2013, 188-201.
- [6] Benuskova, L and N.Kasabov (2007) *Computational Neurogenetic Modelling*, Springer.

- [7] Defoin-Platel, M., S.Schliebs, N.Kasabov, *Quantum-inspired Evolutionary Algorithm: A multi-model EDA*, *IEEE Trans. Evolutionary Computation*, vol.13, No.6, Dec.2009, 1218-1232
- [8] Nuzly, H., N.Kasabov, S.Shamsuddin (2010) *Probabilistic Evolving Spiking Neural Network Optimization Using Dynamic Quantum Inspired Particle Swarm Optimization*, *Proc. ICONIP 2010, Part I, LNCS*, vol.6443.
- [9] S.Soltic, N.Kasabov, *Knowledge extraction from evolving spiking neural networks with a rank order population coding*, *Int.J.Neural Systems*, Vol. 20, No. 6 (2010) 437-445, World Scientific Publ.
- [10] N.Kasabov (ed) *The Springer Handbook of Bio- and Neuroinformatics*, Springer, 2013.
- [11] Schliebs, Michael Defoin Platel, Susan Worner and Nikola Kasabov, *Integrated Feature and Parameter Optimization for Evolving Spiking Neural Networks: Exploring Heterogeneous Probabilistic Models*, *Neural Networks*, 22, 623-632, 2009.

Prof. Erkki Oja

Professor with the Aalto University, Finland, Recipient of the 2006 IEEE Computational Intelligence Society Neural Networks Pioneer Award, Director of the Adaptive Informatics Research Centre, Chairman of the Finnish Research Council for Natural Sciences and Engineering, Visiting Professor at the Tokyo Institute of Technology, Japan, Member of the Finnish Academy of Sciences, IEEE Fellow, Founding Fellow of the International Association of Pattern Recognition (IAPR), Past President of the European Neural Network Society (ENNS), Fellow of the International Neural Network Society (INNS). Author of the scientific books:

- "Subspace Methods of Pattern Recognition", New York: Research Studies Press and Wiley, 1983, translated into Chinese and Japanese,
- "Kohonen Maps", Elsevier, 1999,
- "Independent Component Analysis", Wiley, 2001 translated in Chinese and Japanese.

Machine Learning for big data analytics

Saturday, September 14
17:30 - 18:30

During the past 30 years, the amount of stored digital data has roughly doubled every 40 months. Today, about 2.5 quintillion bytes are created every day. This data comes from sensor networks, cameras, microphones, mobile devices, software logs etc. Part of it is scientific data especially in particle physics, astronomy and genomics, part of it comes from other sectors of society such as internet text and documents, web logs, medical records, military surveillance, photo and video archives and e-commerce. This data poses a unique challenge in data mining: finding meaningful things out of the data masses. Central algorithmic techniques to process and mine the data are classification, clustering, neural networks, pattern recognition, regression, visualization etc. Many of these fall under the term machine learning. In the author's research group at Aalto University, Finland, machine learning techniques are developed and applied to many of the above problems together with other research institutes and industry. The talk will cover some recent algorithmic discoveries and illustrate the problem area with case studies in speech recognition and synthesis, video recognition, brain imaging, and large-scale climate research.

Prof. Marios Polycarpou

Professor with the Department of Electrical and Computer Engineering, University of Cyprus. He is a Fellow of the IEEE and currently serves as the President of the IEEE Computational Intelligence Society. He has served as the Editor-in-Chief of the IEEE Transactions on Neural Networks and Learning Systems from 2004 until 2010. He participated in more than 60 research projects/grants, funded by several agencies and industry in Europe and the United States. In 2011, Dr. Polycarpou was awarded the prestigious European Research Council (ERC) Advanced Grant.

Distributed Sensor Fault Diagnosis in Big Data Environments

Friday, September 13
10:30 - 11:30

The emergence of networked embedded systems and sensor/actuator networks has given rise to advanced monitoring and control applications, where a large amount of sensor data is collected and processed in real-time in order to achieve smooth and efficient operation of the underlying system. The current trend is towards larger and larger sensor data sets, leading to so called big data environments. However, in situations where faults arise in one or more of the sensing devices, this may lead to a serious degradation in performance or even to an overall system failure. The goal of this presentation is to motivate the need for fault diagnosis in complex distributed dynamical systems and to provide a methodology for detecting and isolating multiple sensor faults in a class of nonlinear dynamical systems. The detection of faults in sensor groups is conducted using robust analytical redundancy relations, formulated by structured residuals and adaptive thresholds. Various estimation algorithms will be presented and illustrated, and directions for future research will be discussed.

Tutorial

Dr Anastasios Tefas

Anastasios Tefas received the B.Sc. in informatics in 1997 and the Ph.D. degree in informatics in 2002, both from the Aristotle University of Thessaloniki, Greece. Since 2013 he has been an Assistant Professor at the Department of Informatics, Aristotle University of Thessaloniki. From 2008 to 2012, he was a Lecturer at the same University. From 2006 to 2008, he was an Assistant Professor at the Department of Information Management, Technological Educational Institute of Kavala. Dr. Tefas participated in 12 research projects financed by national and European funds. He has co-authored 34 journal papers, 100 papers in international conferences and contributed 7 chapters to edited books in his area of expertise. Over 1900 citations have been recorded to his publications and his H-index is 21 according to Google scholar. His current research interests include computational intelligence, pattern recognition, statistical machine learning, digital signal and image processing and computer vision, biometrics and security.

Neural Networks for Digital Media Analysis and Description

Friday, September 13
11:55 - 12:55

Recent advances in technological equipment, like digital cameras, smart-phones, etc., have led to an increase of the available digital media, e.g., videos, captured every day. Moreover, the amount of data captured for professional media production (e.g., movies, special effects, etc) has dramatically increased and diversified using multiple sensors (e.g., 3D scanners, multi-view cameras, very high quality images, motion capture, etc), justifying the digital media analysis as a big data analysis problem. As expected, most of these data are acquired in order to describe human presence and activity and are exploited either for monitoring (visual surveillance and security) or for personal use and entertainment. Basic problems in human centered media analysis are face recognition, facial expression recognition and human activity recognition. According to YouTube statistics <http://www.youtube.com/yt/press/statistics.html>, 100 hours of video are uploaded by the users every minute. Such a data growth, as well as the importance of visual information in many applications, has necessitated the creation of methods capable of automatic processing and decision making when necessary. This is why a large amount of research has been devoted in the analysis and description of digital media in the last two decades.

In this tutorial a short overview on recent research efforts for digital media analysis and description using neural networks will be given. Neural networks are very powerful in analyzing, representing and classifying digital media content through various architectures and learning algorithms. Both unsupervised and supervised algorithms can be used for digital media feature extraction. Digital media representation can be done either in a synaptic level or at the output level. The specific problem that will be used as a case study for digital media analysis is the human-centered video analysis for activity and identity recognition. Several neural network topologies, such as self organizing maps, independent subspace analysis, multi-layer perceptrons, extreme learning machines and deep learning architectures will be presented and results on human activity recognition will be reported.

Workshops

2nd Mining Humanistic Data Workshop MHDW 2013

Program chairs:

Spyros Sioutas, *Ionian University, Greece*

Christos Makris, *University of Patras, Greece*

Achilleas Kameas, *Hellenic Open University, Greece*

Katia Lida Kermanidis, *Ionian University, Greece*

Giannis Tzimas, *TEI of Messolonghi, Greece*

Aim

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.

Friday, September 13

16:20 - 17:20

17:20 - 18:20

Saturday, September 14

12:40 - 13:40

14:40 - 16:00

Sunday, September 15

13:00 - 14:00

15:00 - 16:00

16:30 - 17:30

Workshop Topics

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*

**3rd Workshop on Computational Intelligence
Applications in Bioinformatics
CIAB 2013**

Friday, September 13
14:55 - 15:55
16:20 - 17:20
Sunday, September 15
15:00 - 16:00

Program Committee:

Spiridon Likothanassis, Chair, *University of Patras, Greece*

Efstratios Georgopoulos, *TEI of Kalamata, Greece*

Seferina Mavroudi, *TEI of Patras, Greece*

Sofia Kossida, *Foundation for Biomedical Research, Academy of Athens, Greece*

Athanasios Tsakalidis, *University of Patras, Greece*

Horacio Perez-Sanchez, *University of Murcia, Spain*

Joshe Garcia, *University of Alicante, Spain*

Alex Gammerman, *Royal Holloway, UK*

Vassilis P. Plagianakos, *University of Central Greece*

George D. Magoulas, *Birkbeck College, UK*

Panos Kalnis, *King Abdullah University of Science and Technology, Saudi Arabia*

Adam Adamopoulos, *Democritus University of Thrace, Greece*

Charalampos Moschopoulos, *Katholieke Universiteit Leuven, Belgium*

Ioannis Valavanis, *National Hellenic Research Foundation, Greece*

Dimitris Vlachakis, *Foundation for Biomedical Research, Academy of Athens, Greece*

Georgia Tsiliki, *Foundation for Biomedical Research, Academy of Athens, Greece*

Konstantinos Theofilatos, *University of Patras, Greece*

Bioinformatics is the field of science in which Biology, Computer Science, and information technology merge to form a single discipline. The ultimate goal of the field is to enable the discovery of new biological insights as well as to create a global perspective from which unifying principles in Biology can be discerned. The analysis and interpretation of biological data is an extremely hard task due to their complexity, size and noisy nature. Recent applications of Computational Intelligence (CI) in this area suggest that they are well-suited to this area of research. This workshop will highlight applications of CI to a broad range of topics. Particular interest will be directed towards novel applications of CI approaches to problems in these areas.

Computational Intelligence, a sub-branch of Artificial Intelligence, studies, mostly nature inspired, adaptive mechanisms to facilitate intelligent behavior in complex and changing environments. Some of the most important CI representative methods are: Artificial Neural Networks, Evolutionary Algorithms, Swarm Intelligence, Artificial Immune Systems, Ant-colony Optimization, and Fuzzy Systems. Individual techniques from these CI paradigms, as well as hybridizations between CI approaches, have been applied successfully to solve Applied Biology, Bioinformatics and Molecular Biology problems.

The aim of CIAB2013 (prlab.ceid.upatras.gr/CIAB2013/) workshop is to serve as an interdisciplinary forum for bringing together specialists and to deal with problems from the field of Biology, Bioinformatics, Computational Biology, Chemical Informatics, and Bioengineering. Issues related to the theory of Computational Intelligence techniques, as well as applications in Bioinformatics and

Computational Biology will be addressed in this workshop in order to motivate research in new trend-setting directions. This is the third year of the existence of the CIAB2013 workshop. CIAB2011 took place in Corfu, Greece, 15-18 September, 2011 at the 12th EANN/7th AIAI Joint Conference (<http://delab.csd.auth.gr/eann2011/>) and CIAB2012 in London, United Kingdom, 20-23 September, 2012 at the 13th EANN Conference.

CIAB2013 welcomes paper submissions introducing and implementing Computational Intelligent techniques to address various problems in Bioinformatics and Computational Biology. Our aim is to bring together researchers, engineers, developers and practitioners from academia to industry working in multi-disciplinary area and technically converging areas. Topics of interest include, but are not limited to:

- *Systems Biology*
- *Molecular Sequence Alignment and Analysis*
- *RNA and protein folding and structure prediction*
- *Gene expression analysis from microarrays*
- *Protein-Protein interactions*
- *Biological Networks*
- *Biological Processes*
- *Biological and Medical Ontologies*
- *Computational Proteomics and Genomics*
- *In-silico Optimization of Biological Systems*
- *High-Throughput Data Analysis (microarrays, mass spectrometry, EST, NGS etc.)*
- *Analysis of Large Biological Data Sets*
- *Medical Image Analysis and Pattern Recognition*

1st Workshop on Innovative European Policies and Applied Measures for Developing Smart Cities

Friday, September 13
17:20 - 18:20
Saturday, September 14
10:00 - 11:00

Program Chairs:

Dr. Ioannis P. Chochliouros, *Hellenic Telecommunications Organization (OTE), Greece*

Prof. Stefanos Kollias, *National Technical University of Athens, Greece*

Prof. Nancy Alonistioti, *National & Kapodistrian University of Athens, Greece*

Dr. Ioannis M. Stephanakis, *Hellenic Telecommunications Organization (OTE), Greece*

The Workshop has been established to disseminate knowledge obtained from EU projects and funded research in the area of Smart Cities as well as original technical reports/deliverables from related pilots and intelligent telecom applications such as the LiveCity Project (Grant Agreement No.297291) and the Social&Smart Project (Grant Agreement No.317947). Other similar projects from the same thematic category are expected to join the current workshop. Papers from industry and academia covering EU policies regarding smart cities in the following areas are encouraged:

- *European Union policies and regulatory issues, business aspects and related market practices*

Economics for Next-Generation-Networks; business trends; cost models and service pricing; access regulation and migration strategies; regulatory challenges and assessment of related applied legal measures; strategic challenges and current European initiatives for research and innovation in the context of smart cities; experimental results from specific research platforms and of related pilots (i.e.: Living Labs); societal and environmental aspects of proposed corresponding solutions; future plans for new use cases, test beds and local initiatives within the scope of an Internet-based modern society; other Internet-based urban ecosystems.

- *Smart cities applications, strategies and business models; application scenarios in the areas of eGovernment, Emergency Services, eHealth, Education and City Experiences; service evaluation and service delivery*

Service-Oriented Architecture (SOA); service business models for smart cities and e-government diffusion; service design, service deployment and service delivery; QoS-related aspects; knowledge-intensive services; risk management in services management; specific applications in the areas of Emergency services, eHealth, Education and City Experiences.

- *Internet of the things, ubiquitous and pervasive services - Applications and interaction for social networking*

Future technologies bridging the physical and virtual worlds; Internet-based ecosystems; Internet services and applications, home area networks, smart home, personal area networks; impacts on the security, privacy and risks on the physical world.

- *AI applications and agents in telecommunications*

Service-oriented agent-based architectures, protocols and deployment environments; multi-agent planning uses; swarm intelligence and ant colony optimization models.

- *Cloud computing, grid computing and virtualization*

Architectures, resource management and protocols, M2M (machine-to-machine) interaction/ SDNs and cloud telematics, brokering.

- *Video-to-video and other multimedia-based communications, IPv6 and mobile networks*

IPv6 protocol and next generation networks; HEVC and H.264/MPEG-4 AVC; mobile TV, multimedia delivery and LTE/Long Term Evolution; Rate-distortion control in heterogeneous networks; Multipoint-to-Multipoint delivery; interactive advertisement; IPTV and IMS; 3D Internet and 3D TV; immersive multimedia; enhanced and augmented reality; virtualization.

Program at a glance

Friday 13/09/13

09:30-10:30	Registration	
10:30-11:30	Invited talk by Professor Marios Polycarpou	
11:30-12:00	Coffee Break	
12:00-13:00	Tutorial by Dr Anastasios Tefas	
13:00-14:00	Session 1 PR-PRED	Session 2 SCA 1
14:00-15:00	Lunch	
15:00-16:00	Workshop CIAB 1	Session 3 MEDA
16:00-16:20	Coffee Break	
16:20-17:20	Workshop MHD 1	Workshop CIAB 2
17:20-18:20	Workshop MHD 2	Workshop IPMSC 1

Thursday 12/9/2013

20:30	Welcome Reception
-------	-------------------

Saturday 14/09/13

09:30-10:00	Registration	
10:00-11:00	Session 4 FUZ	Workshop IPMSC 2
11:00-11:20	Coffee Break	
11:20-12:40	Session 5 EVOLA	Session 6 SCA 2
12:40-13:40	Workshop MHD 3	Session 7 CNNN
13:40-14:40	Lunch	
14:40-16:00	Workshop MHD 4	Session 8 SOM-RBF
16:00-16:20	Coffee Break	
16:20-17:20	Session 9 CTAAI	Session 10 IVA 1
17:30-18:30	Invited talk by Professor Erkki Oja	

20:30 Gala Dinner

Sunday 15/09/13

09:30-10:30	Registration	
10:30-11:30	Invited talk by Professor Nikola Kasabov	
11:30-12:30	Session 11 IVA 2	Session 12 CPR
12:30-13:00	Coffee Break	
13:00-14:00	Session 13 SOC-MED	Workshop MHD 5
14:00-15:00	Lunch	
15:00-16:00	Workshop CIAB 3	Workshop MHD 6
16:00-16:30	Coffee Break	
16:30-17:30	Session 14 MEDA 2	Workshop MHD 7
17:30-18:30	Session 15 LEARN	
18:30-18:45	Closing Session	

Monday 16/09/13

09:00-17:00 Mount Athos Cruise

Detailed Program

Thursday 12/9/2013

Welcome Reception (at Athena Pallas Village) 20:30

Friday 13/9/2013

Registration (at Athena Pallas Village) 9:30-10:30

Welcome message by Professor Lazaros Iliadis

Keynote Lecture 1	Plenary Session 1	
Professor Marios Polycarpou		10:30-11:30
<i>Distributed Sensor Fault Diagnosis in Big Data Environments</i>		
Chair: Ilias Maglogiannis		

COFFEE BREAK 11:30-12:00

Tutorial 1	Plenary Session 2	
Assistant Professor Anastasios Tefas		12:00-13:00
<i>Neural Networks for Digital Media Analysis and Description presentation</i>		
Chair: Marios Polycarpou		

EANN Session 1: PR-PRED	
Pattern Recognition-Predictors	13:00-14:00
Chair: Konstantinos Margaritis	

Feature Comparison and Feature Fusion for Traditional Dances Recognition
Ioannis Kapsouras, Stylianos Karanikolos, Nikos Nikolaidis and Anastasios Tefas

Intelligent Chair Sensor - Classification of Sitting Posture
Leonardo Martins, Rui Lucena, Joao Belo, Marcelo Santos, Claudia Quaresma, Adelaide Jesus and Pedro Vieira

EANN Session 2: SCA1	
Soft Computing Applications 1	13:00-14:00
Chair: Lazaros Iliadis	

Study of Influence of Grouping Type and the Number of Simultaneously Determined Parameters on the Error of Neural Network Solution in the Inverse Problem of Electrical Prospecting
Sergey Dolenko, Igor Isaev, Eugeny Osbornev, Igor Persiantsev and Mikhail Shimelevich

Prediction of Foreign Currency Exchange Rates Using CGPANN
Durre Nayab, Gul Muhammad Khan and Sahibzada Ali Mahmud

Coastal Hurricane Inundation Prediction for Emergency Response Using Artificial Neural Networks
Bernard Hsieh and Jay Ratcliff

LUNCH 14:00-15:00

Workshop: CIAB1	
Computational Intelligence Applications in Bioinformatics	
Keynote Lecture	
Professor Spyros Likothanasis	15:00-16:00
<i>Application of Computational Intelligence Techniques in Systems' Biology</i>	
Chair: Christos Makris	

EANN Session 3: MEDA	
Medical Applications of AI	15:00-16:00
Chair: Harris Papadopoulos	

An Immune-Inspired Approach for Breast Cancer Classification
Rima Daoudi, Khalifa Djemal and Abdelkader Benyettou

Classification of Arrhythmia Types Using Cartesian Genetic Programming Evolved Artificial Neural Networks
Masood Ahmad Arbab, Gul Muhammad Khan and Sahibzada Ali Mahmud

Artificial Neural Networks and Principal Components Analysis for Detection of Idiopathic Pulmonary Fibrosis in Microscopy Images

Spiros Georgakopoulos, Sotiris Tasoulis, Vassilis Plagianakos and Ilias Maglogiannis

COFFEE BREAK

16:00-16:20

Workshop: MHD1

Mining Humanistic Data

Keynote Lecture 1

Associate Professor Vassilios Verykios

Knowledge Hiding in Data Mining

Chair: **Spyros Sioutas**

16:20-17:20

Workshop: CIAB2

Computational Intelligence Applications in Bioinformatics

Chair: **Konstantinos Theofilatos**

16:20-17:20

Enhanced Weighted Restricted Neighborhood Search Clustering: A Novel Algorithm for Detecting Human Protein Complexes from Weighted Protein-Protein Interaction Graphs

Christos Dimitrakopoulos, Konstantinos Theofilatos, Andreas Pegkas, Spiros Likothanassis and Seferina Mavroudi

A Hybrid Approach to Feature Ranking for Microarray Data Classification

Dusan Popovic, Alejandro Sifrim, Charalampos Moschopoulos, Yves Moreau and Bart De Moor

Derivation of Cancer Related Biomarkers from DNA Methylation Data from an Italian Epidemiological Cohort

Ioannis Valavanis, Emmanouil Sifakis, Panagiotis Georghiadis, Soterios Kyrtopoulos and Aristotelis Chatziioannou

Workshop: MHD2

Mining Humanistic Data

Chair: **Giannis Tzimas**

17:20-18:20

Evaluating Sentiment in Annual Reports for Financial Distress Prediction using Neural Networks and Support Vector Machines

Petr Hajek and Vladimir Olej

Identification of all Exact and Approximate Inverted Repeats in Regular and Weighted Sequences

Carl Barton, Costas S. Iliopoulos, Nicola Mulder and Bruce Watson

Query Expansion through On-line Social Microblogging Services

Ioannis Anagnostopoulos, Gerasimos Razis, Phivos Mylonas and Christos-Nikolaos Anagnostopoulos

Recognizing Emotion Presence in Natural Language Sentences

Isidoros Perikos and Ioannis Hatzilygeroudis

Workshop: IPMSC1

Innovative European Policies and Applied Measures for Developing Smart Cities

Chair: **Ioannis Chochliouros**

17:20-18:20

A Particle Swarm Optimization (PSO) Model for Scheduling Nonlinear Multimedia Services in Multicommodity Fat-tree Cloud Networks

Ioannis M. Stephanakis, Ioannis P. Chochliouros, George Caridakis and Stefanos Kollias

Social and Smart: Towards an Instance of Subconscious Social Intelligence

M. Graña, B. Apolloni, M. Fiasché, G. Galliani, C. Zizzo, G. Caridakis, G. Siolas, S. Kollias, F. Barriento and S. San Jose

Creative Rings for Smart Cities

Simon Delaere, Pieter Ballon, Peter Mechant, Giorgio Parladori, Dirk Osstyn, Merce Lopez, Fabio Antonelli, Sven Maltha, Makis Stamatelatos, Ana Garcia and Artur Serra

Saturday 14/9/2013

Registration (at Athena Pallas Village) 9:30-10:00

EANN Session 4: FUZ

Fuzzy Inference

Chair: **Peter Hajek**

10:00-11:00

Prediction of Air Quality Indices by Neural Networks and Fuzzy Inference Systems – The Case of Pardubice Microregion

Petr Hajek and Vladimir Olej

Audio Data Fuzzy Fusion for Source Localization

Mario Malcangi

Boosting Simplified Fuzzy Neural Networks

Alexey Natekin and Alois Knoll

Workshop: IPMSC2

Innovative European Policies and Applied Measures for Developing Smart Cities

Chair: **George Carydakis**

10:00-11:00

Energy Efficient E-Band Transceiver for Future Networking

Evangelia M. Georgiadou, Mario Giovanni Frecassetti, Ioannis P. Chochliouros, Evangelos Sfakianakis and Ioannis Stephanakis

Intelligent and Adaptive Pervasive Future Internet: Smart Cities for the Citizens

George Caridakis, Georgios Siolas, Phivos Mylonas, Stefanos Kollias and Andreas Stafylopatis

Living Labs in Smart Cities as Critical Enablers for Making Real the Modern Future Internet

Ioannis P. Chochliouros, Anastasia S. Spiliopoulou, Evangelos Sfakianakis, Evangelia Georgiadou and Eleni Rethimiotaki

COFFEE BREAK

11:00-11:20

EANN Session 5: EVOLA

Evolutionary Algorithms

Chair: **Spyros Likothanasis**

11:20-12:40

Temperature Forecasting in the Concept of Weather Derivatives: A Comparison between Wavelet Networks and Genetic Programming

Antonis Alexandridis and Michael Kampouridis

MPEG-4 Internet Traffic Estimation Using Recurrent CGPANN

Gul Muhammad Khan, Fahad Ullah and Sahibzada Ali Mahmud

SCH-EGA: An Efficient Hybrid Algorithm for the Frequency Assignment Problem

Shaohui Wu, Gang Yang, Jieping Xu and Xirong Li

Improving the RACAI Neural Network MSD Tagger

Tiberiu Boros and Stefan Daniel Dumitrescu

EANN Session 6: SCA2

Soft Computing Applications 2

Chair: **Ioannis Hatzilygeroudis**

11:20-12:40

Crossroad Detection Using Artificial Neural Networks

Alberto Hata, Danilo Habermann, Denis Wolf and Fernando Osorio

Application of Particle Swarm Optimization Algorithm to Neural Network Training Process in the Localization of the Mobile Terminal

Jan Karwowski, Michal Okulewicz and Jaroslaw Legierski

Modeling spatiotemporal wild fire data with Support Vector Machines and Artificial Neural Networks

Georgios Karapilafis, Lazaros Iliadis, Stephanos Spartalis, Stefanos Katsavounis and Elias Pimenidis

Prediction of Surface Texture Characteristics in Turning of FRPs using ANN

Stefanos Karagiannis, Vassilis Iakovakis, John Kechagias, Nikos Fountas and Nikolaos Vaxevanidis

Workshop: MHD3

Mining Humanistic Data

Keynote Lecture 2

Professor Evaggelia Pitoura

POIKILO: Models, Algorithms and Tools for Result Diversification

Chair: **Spyros Sioutas**

12:40-13:40

EANN Session 7: CNNN

Classification - Novel ANN architectures

Chair: **Katia Kermanidou**

12:40-13:40

Towards a Wearable Coach: Classifying Sports Activities with Reservoir Computing

Stefan Schliebs, Nikola Kasabov, Doug Hunt and Dave Parry

Real-Time Psychophysiological Emotional State Estimation in Digital Gameplay Scenarios

Pedro Nogueira, Rui Rodrigues and Eugenio Oliveira

Novel Neural Architecture for Air Data Angle Estimation

Manuela Battipede, Mario Cassaro, Piero Gili and Angelo Lerro

LUNCH

13:40-14:40

Workshop: MHD4

Mining Humanistic Data

Chair: **Evaggelia Pitoura**

14:40-16:00

Classification of Event Related Potentials of Error-Related Observations Using Support Vector Machines

Pantelis Asvestas, Errikos Ventouras, Irene Karanasiou and George Matsopoulos

A Novel Hierarchical Approach to Ranking Based Collaborative Filtering

Athanasios N. Nikolakopoulos, Marianna Kouneli and John Garofalakis

Mimicking Real Users' Interactions on Web Videos through a Controlled Experiment

Antonia Spiridonidou, Ioannis Karydis and Markos Avlonitis

Mining Student Learning Behavior and Self-assessment for Adaptive Learning Management System

Konstantina Moutafi, Paraskevi Vergeti, Christos Alexakos, Christos Dimitrakopoulos, Konstantinos Giotopoulos, Hera Antonopoulou and Spiros Likothanassis

Exploiting Fuzzy Expert Systems in Cardiology

Efrosini Sourla, Vasileios Syrimpeis, Konstantina-Maria Stamatopoulou, Georgios Merekoulias, Athanasios Tsakalidis and Giannis Tzimas

EANN Session 8: SOM-RBF

Learning and Data Mining 2

Chair: **Konstantinos Margaritis**

14:40-16:00

A Parallel and Hierarchical Markovian RBF Neural Network: Preliminary Performance Evaluation

Yiannis Kokkinos and Konstantinos Margaritis

Data Mining and Modelling for Wave Power Applications Using Hybrid SOM-NG Algorithm

Mario J. Crespo-Ramos, Ivan Machon-Gonzalez, Hilario Lopez-Garcia and Jose Luis Calvo Rolle

Automatic Detection of Different Harvesting Stages in Lettuce Plants by Using Chlorophyll Fluorescence Kinetics and Supervised Self Organizing Maps (SOMs)

Xanthoula Eirini Pantazi, Dimitrios Moshou, Dimitrios Kasampalis, Pavlos Tsouvaltzis and Dimitrios Kateris

Analysis of Heating Systems in Buildings Using Self-Organizing Maps

Pablo Barrientos, Carlos J. Del Canto, Antonio Moran, Serafin Alonso, Miguel A. Prada, Juan J. Fuertes and Manuel Dominguez

COFFEE BREAK

16:00-16:20

EANN Session 9: CTAAl

Control Techniques-Aspects of AI evolution

Chair: **Mario Malcangi**

16:20-17:20

Neural Network Simulation of Photosynthetic Production

Tibor Kmet and Maria Kmetova

A Novel Artificial Neural Network based Space Vector Modulated DTC and its Comparison with other Artificial Intelligence (AI) Control Techniques
Sadhana Jadhav and B Chaudhari

Thinking Machines versus Thinking Organisms
Petro Gopych

EANN Session 10: IVA1
Image – Video Analysis 1 16:20-17:20
 Chair: **Anastasios Tefas**

IMMI: Interactive Segmentation Toolkit
Jan Masek, Radim Burget and Vaclav Uher

Learning Accurate Active Contours
Adas Gelzinis, Antanas Verikas, Marija Bacauskiene and Evaldas Vaiciukynas

Local Binary Patterns and Neural Networks for No-Reference Image and Video Quality Assessment
Marko Panic, Dubravko Culibrk, Srdjan Sladojevic and Vladimir Crnojevic

Keynote Lecture 2 Plenary Session 3
Professor Erkki Oja 17:30-18:30
Machine Learning for Big Data Analytics
 Chair: **Nikola Kasabov**

Gala Dinner 20:30

Sunday 15/9/2013

Registration 9:30-10:30

Keynote Lecture 3 Plenary Session 4
Professor Nikola Kasabov 10:30-11:30
Neurocomputing for Spatio/Spectro-Temporal Pattern Recognition and Early Event Prediction: Methods, Systems, Applications
 Chair: **Erkki Oja**

EANN Session 11: IVA2
Image – Video Analysis 2 11:30-12:30
 Chair: **Adas Gelzinis**

Pattern Recognition in Thermal Images of Plants Pine Using Artificial Neural Networks
Adimara Bentivoglio Colturato, Andre Gomes Benjamim, Daniel Fernando Pigatto, Danielle Bentivoglio Colturato, Alex Sandro Roschildt Pinto, Luiz Henrique Castelo Branco, Edson Luiz Furtado and Kalinka Regina Lucas Jaquie Castelo Branco

Direct Multi-label Linear Discriminant Analysis
Maria Oikonomou and Anastasios Tefas

Image Restoration Method by Total Variation Minimization Using Multilayer Neural Networks Approach
Mohammed Debakla, Khalifa Djemal and Mohamed Benyettou

EANN Session 12: CPR
Classification – Pattern Recognition 11:30-12:30
 Chair: **Aristeidis Tsitiridis**

Hierarchical Object Recognition Model of Increased Invariance
Aristeidis Tsitiridis, Ben Mora and Mark Richardson

Detection of Damage in Composite Materials Using Classification and Novelty Detection Methods
Ramin Amali and Bradley Hughes

Impact of Over and Under Sampling on Neural Network Classification Performance in the Context of Repeat Movie Viewing

Elena Fitkov-Norris and Sakinat Oluwabukonla Folorunso

Discovery of Weather Forecast Web Resources Based on Ontology and Content-driven Hierarchical Classification

Anastasia Moumtzidou, Stefanos Vrochidis and Ioannis Kompatsiaris

COFFEE BREAK

12:30-13:00

EANN Session 13: SOC-MED

Social Media – Community Based Governance

13:00- 14:00

Chair: **Manolis Maragoudakis**

On Mining Opinions from Social Media

Vicky Politopoulou and Manolis Maragoudakis

On the Quantification of Missing Value Impact on Voting Advice Applications

Marilena Agathokleous, Nicolas Tsapatsoulis and Ioannis Katakis

Automata on Directed Graphs for the Recognition of Assembly Lines

Antonios Kalampakas, Stefanos Spartalis and Lazaros Iliadis

Workshop: MHD5

Mining Humanistic Data

13:00- 14:00

Chair: **Christos Makris**

The Strength of Negative Opinions

Athanasios Papaioikonomou, Magdalini Kardara, Konstantinos Tserpes and Theodora Varvarigou

Extracting Knowledge from Web Search Engine Using Wikipedia

Andreas Kanavos, Christos Makris, Yannis Plegas and Evangelos Theodoridis

AppendicitisScan Tool: a New Tool for the Efficient Classification of Childhood Abdominal Pain Clinical Cases Using Machine Learning Tools

Athanasios Mitroulias, Konstantinos Theofilatos, Spiros Likothanassis and Seferina Mavroudi

Mining the Conceptual Model of Open Source CMS Using Reverse Engineering Techniques

Vassiliki Gkantouna, Spyros Sioutas, Georgia Sourla, Athanasios Tsakalidis and Giannis Tzimas

LUNCH

14:00-15:00

Workshop: CIAB3

Computational Intelligence Applications in Bioinformatics

15:00-16:00

Chair: **Chrisina Jayne**

Classification Models for Alzheimer's Disease Detection

Christos-Nikolaos Anagnostopoulos, Ioannis Giannoukos, Christian Spenger, Andrew Simmons, Patrizia Mecocci, Hikka Soininen, Iwona Kloszewska, Bruno Vellas, Simon Lovestone and Magda Tsolaki

Classification of Risk Factors in Abdominal Pain

Theodoros Iliou, Christos-Nikolaos Anagnostopoulos, Ioannis Stephanakis and George Anastassopoulos

Analysis of DNA Barcode Sequences Using Neural Gas and Spectral Representation

Antonino Fiannaca, Massimo La Rosa, Riccardo Rizzo and Alfonso Urso

A Genetic Algorithm for Pancreatic Cancer Diagnosis

Charalampos Moschopoulos, Dusan Popovic, Alejandro Sifrim, Grigorios Beligiannis, Bart De Moor and Yves Moreau

Workshop: MHD6

Mining Humanistic Data

15:00-16:00

Chair: **Vassilios Verykios**

Multilingual Representation of Possessive Pronouns in Universal Networking Language

Velislava Stoykova

Sleep Spindle Detection in EEG Signals combining HMMs and SVMs

Iosif Mporas, Panagiotis Korveis, Evangelia I. Zacharaki and Vasileios Megalooikonomou

Classifying Ductal Trees Using Geometrical Features and Ensemble Learning Techniques

Angeliki Skoura, Tatyana Nuzhnaya, Predrag Bakic and Vasilis Megalooikonomou

COFFEE BREAK

16:00-16:30

EANN Session 14: MEDA2

Medical Applications of AI-Bioinformatics

Chair: **Harris Papadopoulos**

16:30-17:30

Probabilistic Prediction for the Detection of Vesicoureteral

Harris Papadopoulos and George Anastassopoulos

Application of a Neural Network for Improve the Automatic Measurement of Blood Pressure

Juan Luis Salazar Mendiola, Jose Luis Vargas Luna, Jose Luis Gonzalez Guerra and Jorge Armando Cortes Ramirez

3D Molecular Modelling of the Helicase Enzyme of the Endemic, Zoonotic Greek Goat Encephalitis Virus

Dimitrios Vlachakis, Georgia Tsiliki and Sophia Kossida

Workshop: MHD7

Mining Humanistic Data

Chair: **Giannis Karydis**

16:30-17:30

Medical Decision Making via Artificial Neural Networks: a Smart Phone-embedded Application Addressing Pulmonary Diseases' Diagnosis

George - Peter Economou and Vaios Papaioannou

A Simulator for Privacy Preserving Record Linkage

Alexandros Karakasidis and Vassilios Verykios

Development of a Clinical Decision Support System Using AI, Medical Data Mining and Web Applications

Dimitrios Tsolis, Kalliroi Paschali, Anna Tsakona and Zafeiria-Marina Ioannou, Spiridon Likothanasis, Athanasios Tsakalidis, Theodore Alexandrides and Athanasios Tsamandas

Supporting and Consulting Mechanism for Teachers during Distance Learning Process: The case of Russian Verbs

Xenia Kalita, Alexander Gartsov, Giorgos Pavlidis and Photis Nanopoulos

EANN Session 15: LEARN

Learning

Chair: **Aristeidis Tsitiridis**

17:30-18:30

Algorithmic Problem Solving Using Multimedia Interface. A Case Study

Antonia Plerou and Panayiotis Vlamos

No-Prop-fast – a High-speed Multilayer Neural Network Learning Algorithm: MNIST Benchmark and Eye-tracking Data Classification

Andre Frank Krause, Kai Essig, Martina Piefke and Thomas Schack

CPL Criterion Functions and Learning Algorithms Linked to the Linear Separability Concept

Bobrowski Leon

Learning Errors of Environmental Mathematical Models

Dimitri Solomatine, Vadim Kuzmin and Durga Lal Shrestha

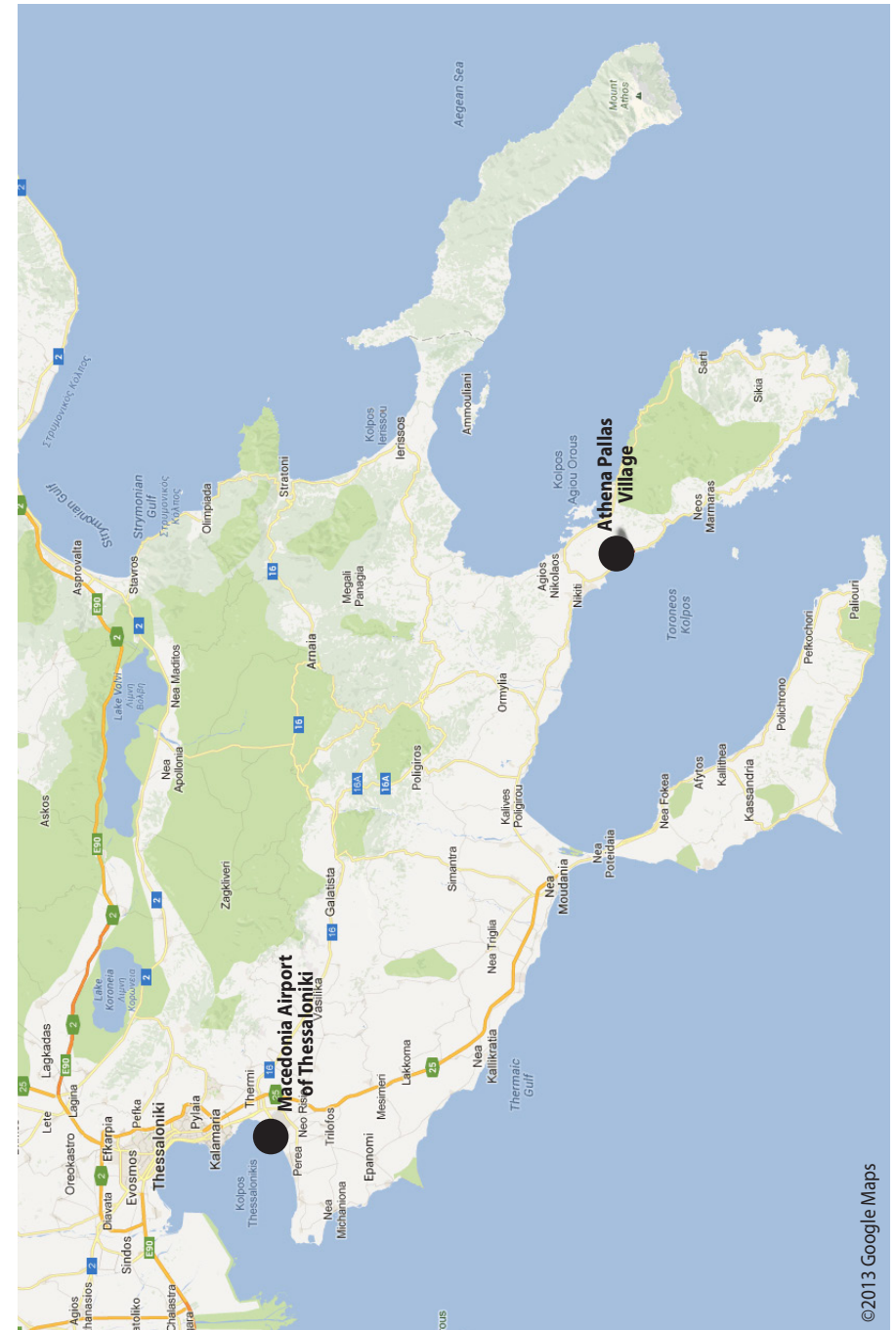
Monday 16/9/2013

Mount Athos cruise

9:00-17:00

General Conference Information

- Registration** The conference registration will take place each day of the conference (13th- 15th September) 9:30 am - 10:30 am.
- Help and Support** If you need help or additional information during the symposium please contact one of the 14th EANN organizers.
- Phone country code** for Greece is ++30.
- Electricity** The voltage/frequency in Greece is AC 230 volts / 50 Hz with a plug of two round pins set parallel to each other (Type B). Non Greek participants may need a plug adapter and/or a voltage converter for electrical appliances.
- Time** Greece is located in the Eastern European Summer Time (EEST). During the conference the summer Daylight Saving Time is in effect: UTC +3 hours or GMT + 2 hours.
- Information for Presenters** Presentation time (including time for questions) is 15-20 minutes. Please be considerate to the other speakers: keep to the allowed time. You can present using laptops located at each presentation room. Earlier during the conference, please go to the room in which you will be presenting in order to copy your presentation files onto the conference laptop computer. Ask for help from the technical staff at each room. Test it to make sure it runs as expected.
- Conference venue** **Athena Pallas Village**
This property has its own private beach in Elia, 5 miles away from Neos Marmaras. Athena Pallas features 2 restaurants, and a swim-up bar and excellent spa facilities. Athena Pallas's beautifully furnished rooms and suites feature wooden beams and stone features. All come complete with satellite TV, air conditioning and minibar. Athena Pallas Village's spa center features massage rooms, sauna, jacuzzi, hammam and indoor heating pool. Guests can also choose from 3 outdoor swimming pools to refresh in. The main restaurant, Doxato, has a rich breakfast and dinner buffet. Regional dishes are served at the Aegean Taste tavern with views of the lovely pool area. There are also 3 snack bars near the pool.





ARISTOTLE UNIVERSITY OF THESSALONIKI



DEMOCRITUS UNIVERSITY OF THRACE



INTERNATIONAL
NEURAL
NETWORK
SOCIETY



Springer



delab.csd.auth.gr/eann2013/