http://iisa2016.unipi.gr/

IISA 2016

DETAILED CONFERENCE PROGRAM

The International Conference on Information, Intelligence, Systems and Applications (IISA) series offers a forum for the constructive interaction and prolific exchange of ideas among scientists and practitioners from different research fields – such as computers, mathematics, physics, biology, medicine, chemistry, experimental psychology, social sciences, linguistics, and engineering – having the goal of developing methodologies and tools for the solution of complex problems in artificial intelligence, biology, neuroscience, security, monitoring, surveillance, healthcare, sustainability in energy sources, governance, education, commerce, automation, robotics, optimization, image, speech and natural languages, and their integration.

IISA 2016 CHAIRS' MESSAGE

Welcome to the **2016 International Conference on Information, Intelligence, Systems, and Applications (IISA 2016)**. IISA 2016 is the seventh conference in the IISA series, technically co-sponsored by the Institute of Electrical and Electronic Engineers (IEEE), the Biological and Artificial Intelligence Foundation (BAIF), the University of Piraeus, Aristotle University of Thessaloniki and the Technological Educational Institute of Western Macedonia.

Information is widely available and accessible, but frequently leads to information overload and overexposure, while the effort for coding, storing, hiding, securing, transmitting and retrieving it may be excessive. **Intelligence** is required to manage information and extract knowledge from it, inspired by biological and other paradigms. Information and Multimedia **Systems**, with an increasing level of Intelligence, are being developed that incorporate these advances. As a result, new Technologies, Protocols and **Applications** are emerging.

The International Conference on Information, Intelligence, Systems and Applications (IISA) series offers a unique forum for the constructive interaction and prolific exchange of ideas among scientists and practitioners from different research fields – such as computers, mathematics, physics, biology, medicine, chemistry, experimental psychology, social sciences, linguistics, and engineering – having the goal of developing methodologies and tools for the solution of complex problems in artificial intelligence, biology, neuroscience, security, monitoring, surveillance, healthcare, sustainability in energy sources, governance, education, commerce, automation, robotics, optimization, image, speech and natural languages, and their integration.

The conference is held on an annual basis and intended as an international forum for researchers and professionals in all areas of Information, Intelligence, Systems and Applications. Every year, we invite submission of papers presenting high-quality original research and developments for the conference tracks listed below. The conference features tutorials, technical paper presentations, workshops, and distinguished keynote speeches.

- **Track I – Information Processing and Intelligence**
- **Track II – Multimedia Systems and Networks**
- **Track III – Educational Informatics**
- **Track IV – Cyber Security**
- **Track V – Smart Energy and Smart Cities**
- **Track VI – Healthcare**
- **Track VII - Applications**

This year's conference marks the seventh IISA. IISA 2016 is located in Porto Carras Grand Resort, Chalkidiki, Greece. IISA 2016 will last for three days and its technical program consists of twenty three (23) technical paper presentation sessions, three (3) invited keynote speeches and one (1) tutorial presentation.

This year, we received two hundred and ten (210) high quality submissions. Due to space and time constraints, only the very best of the submissions were accepted for inclusion in the IISA 2016 program. In total, eighty two (82) of the submissions were selected for presentation in the conference as full papers. This gives an acceptance rate of 39%. In addition to the full papers, twenty (20) papers were accepted as short, raising the total number of papers that will be included in the conference Proceedings to one hundred and two (102).

These correspond to a total acceptance rate of 48,6%. Moreover, accepted papers were authored by authors-researchers from every continent of the World who represented academia, government, industry, and business.

In addition to the technical paper presentations, IISA 2016 features the following invited keynote speakers (in alphabetical order):

- **Prof.-Dr. Demetra Evangelou, Democritus University, Greece and Purdue University, USA**
  Title of talk: *Homo Fabiens Redux: Engineering Education and Intelligent Systems Solutions in the 21st Century*

- **Prof.-Dr. Peter P. Groumpos, University of Patras, Greece**
  Title of talk: *Deep Learning vs. Wise Learning: A Critical and Challenging Overview*

- **Prof.-Dr. Lefteri H. Tsoukalas, University of Thessaly, Greece and Purdue University, USA**
  Title of talk: *Smart Energy: The Role of Intelligent Connectivity in Evolving Energy Networks*

IISA 2016 will also feature the following tutorial presentation:

- **Prof.-Dr. Andreas Spanias, Director of SenSIP Center, Arizona State University, USA**
  Title of talk: *Adaptive Signal Processing Tutorial*

We are thankful to the many people who contributed to the success of IISA 2016. Firstly, thanks are due to the paper authors, including those whose papers were not accepted in the program, for choosing IISA 2016 as the forum for disseminating the results of their research.

Thanks are due to the special session organizers as well as a significant percentage of accepted papers came from invited sessions. We are also thankful to the IISA2016 program committee members and reviewers for their wonderful work in reviewing and selecting in a timely manner the best among the submitted papers.

Special thanks are due to the University of Piraeus and its Research Center for their financial sponsorship. Thanks are also due to the IEEE, BAIF Aristotle University of Thessaloniki and the Technological Educational Institute of Western Macedonia for their technical co-sponsorship of the conference.

Special thanks are due to the Local Organizing Chairs:

- Aggelos Michalas, Technological Educational Institute of Western Macedonia, Greece
- Thrassyvoulos Tsiatsos, Aristotle University of Thessaloniki, Greece

Last, but not least, special thanks are due to our dedicated webmaster,

- Aris Sako, University of Piraeus, Greece

Finally, on behalf of the 2016 IEEE International Conference on Information, Intelligence, Systems, and Applications (IISA 2016), we invite all of you to join us in Porto Carras Grand Resort, Chalkidiki, Greece and enjoy the program and your stay in this beautiful place.

Nikolaos Bourbakis, George A. Tsihrintzis, and Maria Virvou

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PROGRAM AT A GLANCE

TIME	WEDNESDAY JULY 13, 2016	THURSDAY JULY 14, 2016	FRIDAY JULY 15, 2016
08:00-08:30	REGISTRATION	-----	-----
08:30-09:00	OPENING SESSION	-----	-----
09:00-10:00	KEYNOTE – 1 / ROOM 1	KEYNOTE – 2 / ROOM 1	KEYNOTE – 3 / ROOM 1
10:00-10:30	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
10:30-12:30	WM-1 / ROOM 1 WM-2 / ROOM 2 WM-3 / ROOM 3	TM-1 / ROOM 1 TM-2 / ROOM 2 TM-3 / ROOM 3	FM-1 / ROOM 1 FM-2 / ROOM 2 FM-3 / ROOM 3
12:30-13:30	LUNCH	LUNCH	LUNCH
13:30-15:30	WA-1 / ROOM 1 WA-2 / ROOM 2 WA-3 / ROOM 3	TA-1 / ROOM 1 TA-2 / ROOM 2 TA-3 / ROOM 3	FA-1 / ROOM 1 FA-2 / ROOM 2 FA-3 / ROOM 3
15:30-16:00	COFFEE BREAK	COFFEE BREAK	COFFEE BREAK
16:00-17:20	WE-1 / ROOM 1 WE-2 / ROOM 2	TUTORIAL / R00M 1 16:00 – 17:00	FE-1 / ROOM 1 FE-2 / ROOM 2 FE-3 / ROOM 3
		GALA DINNER 21:00-24:00	CLOSING 17:30 - 18:00

CONFERENCE PROGRAM

REGISTRATION

WEDNESDAY, JULY 13, 8:00-8:30 / RECEPTION DESK

OPENING SESSION

WEDNESDAY, JULY 13, 8:30-09:00 / ROOM 1

Professor Nikolaos Bourbakis,

Wright State University, USA

Professor George A. Tsihrintzis,

University of Piraeus, Greece

Professor Maria Virvou,

University of Piraeus, Greece

INVITED KEYNOTE SPEECH – 1

Wednesday, July 13, 9:00-10:00 / ROOM 1

Demetra Evangelou, Professor Democritus University of Thrace, Greece and Purdue University, USA

Title: **Homo Fabiens Redux: Engineering Education and Intelligent Systems Solutions in the 21st Century**

Abstract:

"Homo Fabiens" is the fusion of the two distinct, inequivalent and yet converging notions: Homo Sapiens and Homo Faber. This is the era of their convergence, an era that integrates technology with the humanities, scientific thinking with literature, gadgetry with art, and infrastructure with economic and social thinking. During the last couple decades, the end of the Cold War and the massive relocation of manufacturing and to a lesser but significant degree engineering design in emerging markets has led to a precipitous decline in demand for engineering positions in the developed world as well as reduced interest for Engineering Education amongst the young. Grand challenges in energy, environmental conditions, inclusive development, sustainable economies, will require, according to some estimates, 3/4ths of the workforce of the 21st Century to have post-secondary education especially in the Science Technology Engineering and Mathematics (STEM) fields. Their solution calls for the full participation of engineering talent eminently educated in state of the art pedagogy and intelligent systems.

Short bio:

Prof. Evangelou has research and policy experience relevant to the advancement of technological and scientific literacy. She has been an education advisor to several international organizations and foundations including the Van Leer Foundation (Netherlands), the Comenius Foundation (Ministry of

Education, Poland) and the National Science Foundation (USA). In 2013 she has served as Advisor and Chief of Staff in the Ministry of Infrastructure, Transport and Networks of Greece. She is currently on the faculty of Democritus University and serves as an Advisor and Chief of Staff in the Greek Ministry of Rural Development and Food. Professor Evangelou is credited with introducing the concept of Developmental Engineering, a new area of research and education that explores engineering and human development. In 2011 she was awarded by President Obama the Presidential Early Career Award for Scientists and Engineers (PECASE) which is the "the highest honor bestowed by the US Government on Science and Engineering professionals in the early stages of their independent research career." The award citation read "for outstanding research into how early experiences can lead children to pursue engineering later in life and for working with teachers from diverse schools to develop new teaching materials and methods that can help students become innovative and more technologically literate."

Prof. Evangelou is actively involved in research including, but not limited to, early childhood antecedents of engineering thinking, developmental factors in engineering pedagogy, technological literacy and human-artefact interactions. The research is cross-disciplinary involving active collaborations with colleagues from Education, Psychology and Engineering. Prof. Evangelou has served on the faculty of Purdue University, Aristotle University and the University of Thessaly. She holds a PhD from the University of Illinois at Champaign-Urbana and is a member of several scientific and professional societies, including the Sigma Xi Science Honor Society. In 2009 she was awarded the prestigious NSF CAREER Award.

INVITED KEYNOTE SPEECH – 2

Thursday, July 14, 9:00-10:00 / ROOM 1

Peter P. Groumpos, Professor, University of Patras, Greece

Title: **Deep Learning vs. Wise Learning: A Critical and Challenging Overview**

Abstract:

In this keynote paper the most important scientific challenge of knowledge learning is reviewed thought two different approaches: Deep Learning (DL) and Wise Learning (WL).

Learning is the most important thing that living creatures do. As far as any living creature is concerned, any action that does not involve learning is pretty much a waste of time. This is especially so for a human one. An organism cannot properly animate itself without first learning how to. Humans, before they can satisfy their own needs, first have to learn how to do it.

Deep Learning (DL) is a new branch of machine learning based on a set of algorithms that attempt to model high-level abstractions in data by using multiple processing layers, with complex structures or otherwise, composed of multiple non-linear transformations. Research in this area attempts to make better representations and create models to learn these representations from large-scale unlabeled data. Some of the representations are inspired by advances in neuroscience and are loosely based on interpretation of information processing and communication patterns in a nervous system, such as neural coding which attempts to define a relationship between various stimuli and associated neuronal responses in the brain. In this keynote paper DL is extensively reviewed. Various deep learning architectures such as deep neural networks, convolutional deep neural networks, deep belief networks, recurrent neural networks among other ones are reviewed. The way that different DL algorithms have been applied to a number of fields like computer vision, automatic speech recognition, natural language processing, audio recognition, expert systems and bioinformatics where they have been shown to produce state-of-the-art results on various tasks are presented and analyzed. Specific examples are presented.

Wise Learning (WL) is a simple new emerging mathematical approach for modeling Complex Dynamic Systems (CDS). It is new but very challenging. It is exploring and combining theories of fuzzy logic, neural networks, artificial intelligence, intelligent control, Decision trees, fuzzy cognitive maps, Hebbian learning and other advanced state space methods in a new integrated approach. The new main ingredient of this new approach is that "wise" constraints must be taken into considerations. The basis of the new approach is Fuzzy Cognitive Maps which explores simultaneously: Knowledge Base Systems (KBS), computational complexity, Smart Logistic Systems (SLS), Cloud Computing and Internet of Things, multiyear historical data, Multiagent Systems using many experts and discrete state space techniques. A critical comparison between Deep Learning (DL) and Wise Learning (WL) approaches is presented and future research directions in these two different approaches are presented.

Short bio:

Professor P. Groumpos received his Ph.D. from the University of Buffalo of SUNY, in 1978, Department of Electrical Engineering and has been engaged in teaching, research and collaboration with industry since then both in USA (1979-1989) and in Greece since his return from USA to the University of Patras in 1990. He is full professor at the Dept. of EE&CS of the University of Patras. In USA he developed and directed an Energy Research Center at Cleveland State University (1981-1989) while in Greece he developed the Laboratory for Automation and Robotics (LAR) in 1991 and he is its Director since then. His research interests are in the areas of modeling complex dynamic systems, energy, environment, renewable energy sources, Robotics, Fuzzy Cognitive maps (FCM), techno and economics for intelligent buildings and smart grids, optimization of electric power systems and Intelligent Control. He has used extensively Fuzzy Cognitive Maps (FCMs) in many scientific fields with very useful research results such as in: health, energy, environment, communications, agriculture, transportation, Business and Economics Hybrid Energy Systems and reliability analysis of engineering systems.

He is the author of more than 300 scientific publications (Books, invited book chapters, articles, papers, monographs and technical reports). He was the President of Patras Science Park (2004-2010). He has been as principal Investigator in more than 20 Projects as well as partner in another 40 projects.

He is an Invited Academician honorary member of the Russian Council on Mechatronics and Robotics since 2002 and Guest honorary Professor of the East China University of Science and Technology since 2013. He has been the Greek National representative to a number of EU Program Management committees (Esprit, ICT, IMS, and INCO). Professor Groumpos has given more than 15 Plenary and/or Keynote Presentations in International Conferences over the last 10 years.

INVITED KEYNOTE SPEECH – 3

Friday, July 15, 9:00-10:00 / ROOM 1

Lefteri H. Tsoukalas, Professor, University of Thessaly, Greece, and Purdue University, USA

Title: **Smart Energy: The Role of Intelligent Connectivity in Evolving Energy Networks**

Abstract:

Energy diversification and efficiency drives a worldwide innovation effort popularly known as the pursuit of smart energy. At the core of this effort we find the transformative potential of energy connectivity, that is, the successful convergence of energy, computing and information technologies. We will discuss how the promise of smart energy may revolutionize electricity generation, transport and distribution. Pricing signals and short-term elasticities can optimize power distribution and maintain the delicate equilibrium involved in evolving power systems within the smart energy framework. Intelligent approaches form the cornerstone of an energy internet enhancing a variety of network functionalities including, but not limited to, forecasting, monitoring and control at multiple levels. Networks integrating a plethora of energy resource with information and computing may lead to significant efficiencies of scale without compromising reliability and quality of service.

Short Bio:

Professor L. H. Tsoukalas holds a PhD from the University of Illinois at Urbana-Champaign (1989) along with considerable engineering experience in power generation, transmission and distribution. He has held faculty appointments as professor and head of the School of Nuclear Engineering at Purdue University as well as at the University of Thessaly, Tohoku University, the University of Tennessee and Aristotle University. Dr. Tsoukalas has three decades of experience in developing smart instrumentation and control methodologies with over 200 research publications in the area including a book titled “Fuzzy and Neural Approaches in Engineering,” (John Wiley & Sons, New York, 1997). Dr. Tsoukalas has served in advisory and consulting positions for the International Atomic Energy Agency (IAEA); the Agency for Science, Technology and Research (ASTAR) of the Government of Singapore; and the US Department of Energy. Dr. Tsoukalas is a Fellow of the American Nuclear Society and the 2009 recipient of the Humboldt Prize, Germany’s highest honor for international scientists.

TUTORIAL

Thursday July 14, 16:00 – 17:00 / ROOM 1

Title: Adaptive Signal Processing Tutorial

Presenter: Andreas Spanias, Professor in Digital Signal Processing (DSP), Director SenSIP Center, Arizona State University, USA**.**

Abstract:

This combined theory and practice tutorial provides an introduction to the principles of adaptive signal processing including several application areas. The tutorial begins with an introduction to filtering and random signal basics, and continues with a lecture on least squares and gradient methods and their use in adaptive systems. The tutorial then covers adaptive LMS and RLS algorithms and provides several MATLAB and J-DSP simulations of system identification, adaptive noise cancellation, and array processing.

Topics

Adaptive signal processing: least squares, system identification, adaptive gradient algorithms, the LMS algorithm, the RLS algorithm, sequential and block algorithms, frequency-domain algorithms, step size optimization, adaptive noise and echo cancellation, convergence properties, mis-adjustment, multichannel adaptive filters, multichannel X-LMS, FIR and IIR adaptive filters, relation to neural nets, time-varying spectral analysis, speech processing, adaptive linear prediction. Applications covered include: noise and echo cancellation, channel equalization, adaptive arrays, and active noise cancellation.

Who Should Attend

The tutorial is designed for students, engineers and faculty who need to understand the fundamental theory and applications of adaptive signal processing. The tutorial should be of particular interest to colleagues and students who need to prepare for projects that involve adaptive filter hardware and software. Participants should have an understanding of basic engineering mathematics.

Short bio:

Andreas Spanias is Professor in the School of Electrical, Computer, and Energy Engineering at Arizona State University (ASU). He is also the director of the Sensor Signal and Information Processing (SenSIP) center and the founder of the SenSIP industry consortium (now an NSF I/UCRC site). His research interests are in the areas of adaptive signal processing, speech processing, and sensor systems. He and his student team developed the computer simulation software Java-DSP and its award winning iPhone/iPad and Android versions. He is author of two text books: Audio Processing and Coding by Wiley and DSP; An Interactive Approach (2nd Ed.). He served as Associate Editor of the IEEE Transactions on Signal Processing and as General Co-chair of IEEE ICASSP-99. He also served as the IEEE Signal Processing Vice-President for Conferences. Andreas Spanias is co-recipient of the 2002 IEEE Donald G. Fink paper prize award and was elected Fellow of the IEEE in 2003. He served as distinguished lecturer for the IEEE Signal processing society in 2004. He is a series editor for the Morgan and Claypool lecture series on algorithms and software.

TECHNICAL PAPER PRESENTATION SCHEDULE

❖ Wednesday, JULY 13	Detailed Session Program
Session WM.1 Session Chairs: **G.A. Tsihrintzis, P. Groumpos and D.N. Sotiropoulos**	**Advances in Machine Learning – 1: Theoretical Advances** ❖ ***10:30-10:50*** **A Comparative Study using the methods of Simulated Annealing and Non-linear Hebbian Learning for Fuzzy Cognitive Maps Performances** *Eleni Vergini, Theodora - Eleni Kostoula and Petros Groumpos* ❖ ***10:50-11:10*** **Self-Labeled Hidden Naive Bayes Algorithm for Semi-Supervised Classification** *Nikos Fazakis, Stamatis Karlos, Sotiris Kotsiantis and Kyriakos Sgarbas* ❖ ***11:10-11:30*** **Fuzzy Joins in MapReduce: Edit and Jaccard Distance** *Ben Kimmett, Alex Thomo and Venkatesh Srinivasan* ❖ ***11:30-11:50*** **SILEA: a System for Inductive LEArning** *Ahmet Aksoy and Mehmet Hadi Gunes* ❖ ***11:50-12:10*** **Performance Analyses and Improvement of Multilayer Neural Networks** *Chulhee Lee and Seongyoun Woo*

Session WM.2	Signal and Image Analysis and Applications
Session Chairs: **G.A. Tsihrintzis and D.N. Sotiropoulos**	❖ ***10:30-10:50*** **Algorithms for Image Processing in Graph-based Volumetric Segmentation** *Florin Slabu, Dumitru Dan Burdescu and Liana Stanescu* ❖ ***10:50-11:10*** **Optimizing Signal and Discriminant Information for Hyperspectral Images** *Sungwook Youn and Chulhee Lee* ❖ ***11:10-11:30*** **Fake Banknote Detection Using Multispectral Images** *Kyung Won Kang and Chulhee Lee* ❖ ***11:30-11:50*** **Hand Tracking as a Tool to Quantify Carpal Tunnel Syndrome Preventive Exercises** *Alvaro Joffre Uribe Quevedo, Saskia Ortiz, David Rojas and Bill Kapralos* ❖ ***11:50-12.10*** **Sound and Stereoscopic 3D: Examining the effects of sound on depth perception in stereoscopic 3D** *Brian Cullen, Karen Collins, Andrew Hogue and Bill Kapralos*
Session WM.3	Graph and Network Visualisation
Session Chairs: **M. Bekos, T. Mcheldidze and A. Symvonis**	❖ ***10:00-10:20*** **AVDTC of Generalized 3-Halin Graphs** *Michael Bekos, Michael Kaufmann and Chrysanthi Raftopoulou* ❖ ***10:20-10:40*** **Partial Edge Drawing: Homogeneity is more Important than Crossings and Ink** *Carla Binucci, Giuseppe Liotta, Fabrizio Montecchiani and Alessandra Tappini* ❖ ***10:40-11:00*** **Fully Dynamic Semantic Word Clouds** *Carla Binucci, Walter Didimo and Enrico Spataro*
Session WA.1	Advances in Machine Learning – 2: Applications
Session Chairs: **G.A. Tsihrintzis and D.N. Sotiropoulos**	❖ ***13:30-13:50*** **Augmenting fMRI-generated brain connectivity with temporal information** *Fotios Tagkalakis, Aimilia Papagiannaki, Georgios Drakopoulos and Vasilis Megalooikonomou* ❖ ***13:50-14:10*** **Regularizing Large Biosignals with Finite Differences** *Georgios Drakopoulos and Vasilis Megalooikonomou*

	❖ ***14:10-14:30*** **Tensor Analytics for PubMed Articles over Neo4j with an Application to Affective Computing** *Georgios Drakopoulos and Andreas Kanavos* ❖ ***14:30-14:50*** **A Practical k-Anonymous Recommender System** *Athanasios Zigomitros, Achilleas Papageorgiou and Constantinos Patsakis* ❖ ***14:50-15:10*** **Evaluation of Ensemble-based Sentiment Classifiers for Twitter Data** *Christos Troussas, Akrivi Krouska and Maria Virvou*
Session WA.2 Session Chair: **C. Konstantopoulos, G. Pantziou and S. Perantonis**	**Modeling, Computing and Data Handling for Marine Transportation** ❖ ***13:30-13:50*** **Multi-Objective Optimization of the Quay Crane Assignment and Scheduling Problem: Time and Movement Optimization** *Maria Lamprou, Juan David Barbosa and Jean Phelippe Ramos de Oliveira* ❖ ***13:50-14:10*** **Optimization of Vessel and Quay Crane Emissions during the Hoteling Phase** *Abel Meza Talavera, Jose Gerardo Gonzalez Barron and Caio Martin Tessari Campo Passamani* ❖ ***14:10-14:30*** **A static-hybrid berth allocation problem with multi ship crane scheduling** *Reem Al Kaabi, Alia Al Jasmi and Noura Al Hassani* ❖ ***14:30-14:50*** **A Combination of a Dynamic-Hybrid Berth Allocation Problem with Quay Crane Schedule Problem** *Hanan Alrubaiai, Bushra Alnaqbi and Shaikha Alalawi* ❖ ***14:50-15:10*** **A Multi-Vessel Quay Crane Scheduling Problem** *Kalthoom Alawar, Shamma Al Jaberi and Mohamed Alawani* ❖ ***15:10-15:30*** **Simulation and optimization for ship lock scheduling: a case study** *Jannes Verstichel and Greet Vanden Berghe*

Session WA.3	E-Learning and Educational Software
Session Chairs: **M. Virvou and E. Alepis**	❖ ***13:30-13:50*** **An Online Adventure Game for Teaching Math** *Spyros Papadimitriou and Maria Virvou* ❖ ***13:50-14:10*** **A qualitative analysis of the effect of wholistic-analytic cognitive style dimension on the cultural heritage game playing** *George Raptis, Christos Fidas and Nikolaos Avouris* ❖ ***14:10-14:30*** **jLegends – online game to train programming skills** *Konstantinos Tsalikidis and George Pavlidis* ❖ ***14:30-14:50*** **Customization of a Low-End Haptic Device to add Rotational DOF for Virtual Cardiac Auscultation Training** *Alvaro Joffre Uribe Quevedo, David Rojas and Bill Kapralos* ❖ ***14:50-15:10*** **Location-Based Augmented Reality Game to Engage Students in Discovering Institutional Landmarks** *Juan Garay and Alvaro Joffre Uribe Quevedo*

Session WE.1	Machine Learning in Asset Management
Session Chairs: **I. Eleftheriadis, N. Loukeris and S. Berikos**	❖ ***16:00-16:20*** **The Portfolio Yield Reactive (PYR) model** *Nikos Loukeris, Stelios Bekiros and Iordanis Eleftheriadis* ❖ ***16:20-16:40*** **Effectiveness of semi-supervised learning in bankruptcy prediction** *Stamatis Karlos, Nikos Fazakis, Sotiris Kotsiantis and Kyriakos Sgarbas* ❖ ***16:40-17:00*** **The Intelligent Portfolio Selection Optimization System, (IPSOS)** *Nikos Loukeris, S. Bekiros and I. Eletheriadis*

Session WE.2	Methodologies and Algorithms - 1
Session Chairs: **C. Konstantopoulos and M. Poulos**	❖ ***16:00-16:20*** **A Composite Algorithm for the Team Orienteering Problem with Time Windows** *Charalampos Konstantopoulos and Dimitrios Orfanos* ❖ ***16:20-16:40*** **A Methodology for Generating Natural Language Paraphrases** *Isidoros Perikos and Ioannis Hatzilygeroudis* ❖ ***16:40-17:00*** **Near Duplicate Text Detection using Graph Depiction** *Marios Poulos*

❖ THURSDAY, JULY 14 — Detailed Session Program

Session TM.1

Session Chairs:

J. Caro,
H. Adorna and
M. Virvou

Information Technology Systems and Services - 1

- ***10:30-10:50*** **Forecasting and Data Visualization of Dengue spread in the Philippine Visayas Island group**
  Hillary Ingrid Datoc, Romeo Caparas and Jaime Caro
- ***10:50-11:10*** **Student Analytics Using Support Vector Machines**
  Jannieca Camba, Roanna Ellise David, Jaime Caro, Annette Lagman and Ariel Betan
- ***11:10-11:30*** **Design and Development of a Registry System for Primary Vasculitis**
  Elaine Iturralde, Mary Agnes Jardeleza, Ging Racaza, Ester Penserga and Jaime Caro
- ***11:30-11:50*** **A National Registry for Rheumatoid Arthritis for Analysis of Cost and Efficacy of Medication and Biologic Treatment**
  Patrick Leiniel Domingo, Lawrean Angeley Fulcher, Michael Tee and Jaime Caro
- ***11:50-12:10*** **SULTAN: An Application for Landslide Susceptibility Assessment and Site Mapping**
  Karlos Alexi Raya and Jared Martin Cortez

Session TM.2

Session Chairs:

L. Tsoukalas,
P. Groumpos and
M. Alamaniotis

Information-driven Applications for Smart Power and Energy Systems

- ***10:30-10:50*** **MatGridGUI- a Toolbox for GridLAB-D Simulation Platform**
  Antonia Nasiakou, Miltiadis Alamaniotis and Lefteri Tsoukalas
- ***10:50-11:10*** **Three–Phase Congestion Prediction Utilizing Artificial Neural Networks**
  Rafik Fainti, Miltiadis Alamaniotis and Lefteri Tsoukalas
- ***11:10-11:30*** **Evaluation of Human Machine Interface (HMI) in Nuclear Power Plants with Fuzzy Logic Method**
  Pola Lydia Lagari, Antonia Nasiakou, Rafik Fainti, Keyou Mao, Lefteri Tsoukalas, Robert Bean and Miltiadis Alamanioti
- ***11:30-11:50*** **An Overview of Fuzzy Cognitive Maps for Energy Efficiency in Intelligent Buildings**
  Peter Groumpos and Vassiliki Mpelogianni

Session TM.3	ICT Solutions for Energy Efficiency in Smart Cities
Session Chairs: **H. Doukas and J. Psarras**	❖ ***10:30-10:50*** **OPTIMUS Decision Support Tools: Transforming Multidisciplinary Data to Energy Management Action Plans** *Haris Doukas, Vangelis Marinakis, Evangelos Spiliotis and John Psarras* ❖ ***10:50-11:10*** **Integrating a Decision Support System with smart grid infrastructures and ICT solutions towards energy cost reduction** *Evangelos Spiliotis, Vangelis Marinakis, Haris Doukas and John Psarras* ❖ ***11:10-11:30*** **Optimal Thermal Power Production by means of an Equivalent Electric Circuit for a Thermal Network: the Savona Campus Smart Polygeneration Microgrid Case** *Federico Delfino, Massimo Brignone, Luca Barillari, Renato Procopio, Alessandro Nilberto and Matteo Fichera* ❖ ***11:30-11:50*** **Smart Meter: Toward Client Centric Energy Efficient Smartphone Based Solution** *Salam Khanji, Asad Khattak and Omar Alfandi* ❖ ***11:50-12:10 Supporting the analysis of urban data through NoSQL technologies*** *Antonio Attanasio, Tania Cerquitelli and Silvia Chiusano* ❖ ***12:10-12:30*** **Towards a New Approach of Fuzzy Cognitive Maps** *Vassiliki Mpelogianni and Peter Groumpos*
Session TA.1	Information Technology Systems and Services - 2
Session Chairs: **J. Caro, H. Adorna and M. Virvou**	❖ ***13:30-13:50*** **Plant Leaf Recognition by Venation and Shape Using Artificial Neural Network** *Geoffrey Solano, Azeil Louisse Codizar and Abigaile Dionisio* ❖ ***13:50-14:10*** **RadSS: A Radiolarian Classifier using Support Vector Machines** *Louise Ann Apostol, Edanjarlo Marquez, Perlita Gasmen and Geoffrey Solano* ❖ ***14:10-14:30*** **Training Teachers to Develop Interactive Multimedia ESL Courseware for ASEAN Community and Sustainable Development** *Aurelio Vilbar and Cherry Malaque* ❖ ***14:30-14:50*** **A Mobile Application for Campus-based Psychosocial Wellness Program** *Chad Errol Booc, Chara Mae San Diego, Jaime Caro and Michael Tee*

Session TA.2	Social Networks Mining and Applications
Session Chairs: **G.A. Tsihrintzis and D.N. Sotiropoulos**	❖ ***13:30-13:50*** **A Genetic Algorithm Approach for Topic Clustering: A Centroid-Based Encoding Scheme** *Dionisios Sotiropoulos, Demitrios Pournarakis and George Giaglis* ❖ ***13:50-14:10*** **Tensor Fusion of Twitter Affective Metrics in Neo4j** *Georgios Drakopoulos* ❖ ***14:10-14:30*** **Efficient Content Delivery through Popularity Forecasting on Social Media** *Irene Kilanioti and George A. Papadopoulos* ❖ ***14:30-14:50*** **Graph Database Partitioning: A Study** *Ali Ben Ammar* ❖ ***14:50-15:10*** **The effect of preprocessing techniques on Twitter Sentiment Analysis** Akrivi Krouska, Christos Troussas and Maria Virvou
Session TA.3	Knowledge Management and Decision Support Systems
Session Chair: **D. Apostolou**	❖ ***13:30-13:50*** **A Probabilistic Model for Context-Aware Proactive Decision Making** *Alexandros Bousdekis, Nikos Papageorgiou, Babis Magoutas, Dimitris Apostolou and Gregoris Mentzas* ❖ ***13:50-14:10*** **A Recommender for Persuasive Messages in Route Planning Applications** *Efthimios Bothos, Dimitris Apostolou and Gregoris Mentzas* ❖ ***14:10-14:30*** **Trust-based Recommendations through Triadic Closure** *Panagiota Tselenti and Konstantinos Danas* ❖ ***14:30-14:50*** **Ontology-based model for Learning Object Metadata** *Eleni Maria Kalogeraki, Christos Troussas, Dimitris Apostolou, Maria Virvou and Themis Panayiotopoulos* ❖ ***14:50-15:10*** **Rdf serialization from JSON Data** *Stamatios Theoharis and George A. Tsihrintzis*

❖ FRIDAY, JULY 15 — Detailed Session Program

Session FM.1 — Smart Health within Context-Aware Environments

Session Chair:

A. Solanas

- ***10:30-10:50*** **On wandering detection methods in context-aware scenarios**
  Edgar Batista, Fran Casino and Agusti Solanas
- ***10:50-11:10*** **Optimal parameter estimation for wireless signal analysis in context-aware scenarios: A brief study**
  Fran Casino, Peio Lopez-Iturri, Leyre Azpilicueta, Erik Aguirre, Francisco Falcone and Agusti Solanas
- ***11:10-11:30*** **Physiotherapy Smart Connected Devices for S-Health**
  Octavian Postolache and Pedro Silva Girão
- ***11:30-11:50*** **Citizens' Emotion Analysis in Smart Cities Framework**
  Válber César Cavalcanti Roza and Octavian Postolache
- ***11:50-12:10*** **Analysis of Vehicular Connectivity in Smart Health Service Provision Scenarios**
  Peio Lopez Iturri, Fran Casino, Erik Aguirre, Leyre Azpilicueta, Agusti Solanas and Francisco Falcone

Session FM.2 — Self-Organized Adaptive Communications - 1

Session Chairs:

M. Louta, G. Karetsos and T. Lagkas

- ***10:30-10:50*** **Mobile Crowd Sensing Architectural Frameworks: A Comprehensive Survey**
  Malamati Louta, Konstantina Mpanti, George Karetsos and Thomas Lagkas
- ***10:50-11:10*** **Self-Organizing Virtual Devices in the Internet of Things Networks**
  Dimitrios Kelaidonis, Vera Stavroulaki, Vassilis Foteinos, George Poulios, Kostas Petsas, Angelos Rouskas, Panagiotis Demestichas, Panagiotis Vlacheas and Antonis Moustakos
- ***11:10-11:30*** **Investigating the Application of Multi-Objective Optimisation and Multi-Criteria Decision Making to Future Concepts of Intelligent Mobility and Telecommunications**
  Christos Tsotskas and Malamati Louta
- ***11:30-11:50*** **A Responsive Probing Approach to Detect Dynamic Intrusion in a MANET**
  Han-Chao Lee, Shin-Ming Cheng, Kuo-Ping Wu and Hahn-Ming Lee

Session FM.3	Creativity in Intelligent Technologies and Data Science – 1
Session Chairs: **A. Kravets,** **M. Kultsova and** **O. Shabalina**	❖ ***10:30-10:50*** **An ontology-based approach to intelligent support of decision making in waste management** *Marina Kultsova, Roman Rudnev, Anton Anikin and Irina Zhukova* ❖ ***10:50-11:10*** **Forecasting Energy Consumption with the Data Reliability Estimation in the Management of Hybrid Energy System Using Fuzzy Decision Trees** *Mohammed Al-Gunaid, Maxim Shcherbakov, Dmitry Skorobogatchenko, Alla Kravets and Kamaev Valeriy* ❖ ***11:10-11:30*** **Analysis of the Social Network Facebook Comments** *Nguyen Thanh Thao and Alla G. Kravets* ❖ ***11:30-11:50*** **Automated Methods of Patent Array Analysis** *Anton Mironenko and Alla Kravets* ❖ ***11:50-12:10*** **Assessing creativity of game design students** *David C. Moffat and Olga Shabalina* ❖ ***12:10-12:30*** **Modelling of urban transport system based on the ontology** *Natalia Sadovnikova, Anna Matohina, Olga Shabalina, Anastasia Romanova and Daria Shirmanova*
Session FA.1	Mobile-Human Interaction and Applications
Session Chairs: **M. Virvou and** **E. Alepis**	❖ ***13:30-13:50*** **Augmented car: A low-cost augmented reality RC car using the capabilities of a smartphone** *Efthimios Alepis and Athanasios Sakelliou* ❖ ***13:50-14:10*** **MyCrowdCharger: Towards a crowd sourced based application for energy sharing between smartphones** *Efthimios Alepis and Vasilios Berberidis* ❖ ***14:10-14:30*** **Integrating User-Centered Design Practices into Agile Web Development: A Case Study** *Panagiotis Sfetsos, Lefteris Angelis, Ioannis Stamelos and Pashalis Raptis*

Session FA.2	**Self-Organized Adaptive Communications - 2**
Session Chairs: **M. Louta, G. Karetsos and T. Lagkas**	❖ ***13*:30-13:50 A proposal for REST with XMPP as base protocol for Intercloud Communication** *Alexander Stanik and Odej Kao* ❖ ***13:50-14:10* QoS-aware scheduling in LTE-A networks with SDN control** *Emmanouil Skondras, Angelos Michalas, Aggeliki Sgora and Dimitrios D. Vergados* ❖ ***14:10-14:30* An Overview of Self-Organization Aspects in Femtocell Deployments** *George Karetsos and Malamati Louta*
Session FA.3	**Creativity in Intelligent Technologies and Data Science – 2**
Session Chairs: **A. Kravets, M. Kultsova and O. Shabalina**	❖ ***13:30-13:50* Neurodynamic Non-invasive Fetal Electrocardiogram Extraction** *Dmitriy Devyatykh and Olga Gerget* ❖ ***13:50-14:10* Computer - Based Visual Analysis of Ecology Influence on Human Mental Health** *Nazim Orudjev, Natalia Salnikova, Mikhail Lempert, Andrew Kuzmichev, Alla Kravets and Ivan Osaulenko* ❖ ***14:10-14:30* Anxiety disorders in the early post-myocardial infarction: Adaptol treatment and the relationship with the quality of medical care evaluated by computer-based system** *Boris Lempert, Mikhail Statsenko, Natalia Shilina, Lev Lempert and Olga Shabalina* ❖ ***14:30-14:50* Problems of Introducing Information technologies in Practice of Psychiatric Service** *Nazim Orudjev, Olga Poplavskaya, Lev Lempert, Natalia Salnikova and Marina Kultsova* ❖ ***14:50-15:10* An ontological user model for automated generation of adaptive interface for users with special needs** *Marina Kultsova, Anton Anikin, Anastasiia Potseluico and Roman Romanenko* ❖ ***15:10-15:30* The social networks' nodes grouping algorithm for the analysis of implicit communities** *Vasiliy Perepelitsyn and Alla Kravets*

Session FE.1	Surveys on Emerging Research Areas
Session Chair: **N. Bourbakis**	❖ ***16:00-16:20*** **Categorization of Research Surveys and Reviews on Human Activities** *Argyres Angeleas, Nikolaos Bourbakis and George A. Tsihrintzis* ❖ ***16:20-16:40*** **Recognizing Objects from their Incomplete Representation: A Survey** *Mike Robbeloth and Nikolaos Bourbakis* ❖ ***16:40-17:00*** **A Survey on Human Machine Dialogue Systems** *Stavros Mallios and Nikolaos Bourbakis* ❖ ***17:00-17:20*** **A *Survey* on Reverse Engineering of Technical Diagrams** Georgia Rematska and Nikolaos Bourbakis

Session FE.2	Methodologies and Algorithms -2
Session Chair: **S. Pascua**	❖ ***16:00-16:20*** **A Control Structure-Token-Based Metric for Software Functional Cohesion, Entropy and Re- Engineering** *Sonia Pascua* ❖ ***16:20-16:40*** **MEMS INS/GPS Integrated Structure Evaluation with Experimental Data** *Teodor Lucian Grigorie and Dragos George Sandu* ❖ ***16:40-17:00*** **A new efficient algorithm for continuous skyline queries** *Ibrahim Gomaa and Hoda Mokhtar*

Session FE.3	Creativity in Intelligent Technologies and Data Science - 3
Session Chairs: **Session Chairs:** **A. Kravets,** **M. Kultsova and** **O. Shabalina**	❖ ***16:00-16:20*** **Synthesis of new technical solutions with physical effects database** *Dmitriy Korobkin, Sergey Fomenkov, Sergey Kolesnikov and Vladimir Lobeyko* ❖ ***16:20-16:40*** **EVGEN: a Framework for Event Generator in Proactive System Design** *Van Phu Tran, Maxim Vladimirovich Shcherbakov and Anh Tuan Nguyen* ❖ ***16:40-17:00*** **Classifying Sentiments in Nepali Subjective Texts** *Lal Bahadur Reshmi Thapa and Bal Krishna Bal* ❖ ***17:00-17:20*** **Improving Nepali OCR Performance by Using Hybrid Recognition Approaches** *Nirajan Pant and Bal Krishna Bal*

Thank you for your contribution to IISA 2016 which was held at

Porto Carras Grand Resort, Chalkidiki, Greece

Hope to see you again in one of our future IISA International Conference Series

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