

# FINAL PROGRAM

## 5th IFIP Conference on Artificial Intelligence Applications & Innovations (AIAI'2009)

23-25 April 2009, Thessaloniki, Greece

### The program at a glance

	Thursday 23 April		Friday 24 April			Saturday 25 April		
8:30-9:30	<i>Registration</i>		<i>Registration</i>			<i>Registration</i>		
9:30-11:00	<b>Room A</b>		<b>Room A</b>			<b>Room A</b>	<b>Room B</b>	
	Plenary 1		Plenary 2			Session 10	Tutorial 2	
11:00-11:30	<i>Coffee Break</i>		<i>Coffee Break</i>			<i>Coffee Break</i>		
11:30-13:00	<b>Room A</b>	<b>Room B</b>	<b>Room A</b>	<b>Room B</b>	<b>Room C</b>	<b>Room A</b>	<b>Room B</b>	<b>Room C</b>
	Session 1	Session 2	Session 7	Workshop 1 <i>Session 1</i>	Tutorial 1	Session 11	Workshop 3 <i>Session 1</i>	Workshop 4 <i>Session 1</i>
13:00-14:30	<i>Lunch</i>		<i>Lunch</i>			<i>Lunch</i>		
14:30-16:00	<b>Room A</b>	<b>Room B</b>	<b>Room A</b>	<b>Room B</b>	<b>Room C</b>	<b>Room A</b>	<b>Room B</b>	<b>Room C</b>
	Session 3	Session 4	Session 8	Workshop 1 <i>Session 2</i>	Workshop 2 <i>Session 1</i>	Session 12	Workshop 3 <i>Session 2</i>	Workshop 4 <i>Session 2</i>
16:00-16:30	<i>Coffee Break</i>		<i>Coffee Break</i>			<b>Room A</b>		
16:30-18:00	<b>Room A</b>	<b>Room B</b>	<b>Room A</b>	<b>Room B</b>	<b>Room C</b>	Closing session		
	Session 5	Session 6	Session 9	Workshop 1 <i>Roundtable</i>	Workshop 2 <i>Session 2</i>			
21:00-23:00			<i>Gala Dinner</i>					

**Room A: THEODORA**

**Room B: VERGINA I**

**Room C: VERGINA II**

# Conference Sessions

## Plenary Session 1: Invited Talk

(Chair: I. Vlahavas)

Synergies of AI Methods for Robotic Planning & Grabbing, Facial Expressions Recognition,  
and Blind's Navigation  
*Nikolaos Bourbakis*

## Plenary Session 2: Invited Talk

(Chair: L. Iliadis)

Neural Networks for Modal and Virtual Learning  
*Dominic Palmer-Brown*

## Tutorial 1:

(Chair: I. Maglogiannis)

Multimodal Emotion Recognition in HCI Environments  
*Kostas Karpouzis*

## Tutorial 2:

(Chair: N. Bassiliades)

Capitalization of Collective Knowledge: from Knowledge Engineering to Computer Supported  
Cooperative Work and Socio-Semantic Web  
*Nada Matta*

## Session 1: Intelligent Human-Computer Interaction

(Chair: C. Schizas)

Performance Evaluation of a Speech Interface for Motorcycle Environment (regular)  
*Iosif Mporas, Todor Ganchev, Otilia Kocsis, Nikos Fakotakis*

Learning Rules from User Behaviour (regular)  
Domenico Corapi, Oliver Ray, Alessandra Russo, Arosha Bandara, Emil Lupu, Domenico

MobiAct: Supporting Personalized Interaction with Mobile Context-Aware Applications  
(regular)  
*Adrian Stoica, Nikolaos Avouris*

Semi-tacit Adaptation of Intelligent Environments (short)  
*Tobias Heinroth, Achilles Kameas, Hani Hagrass, Yacine Bellik*

Multi-modal System Architecture for Serious Gaming (short)  
*Otilia Kocsis, Todor Ganchev, Iosif Mporas, George Papadopoulos, Nikos Fakotakis*

## Session 2: Decision Support Systems

(Chair: I. Maglogiannis)

A Hybrid Technology for Operational Decision Support in Pervasive Environments (regular)  
*Alexander Smirnov, Tatiana Levashova, Nikolay Shilov, Alexey Kashevnik*

An Expert System Based on Parametric Net to Support Motor Pump Multi-Failure Diagnostic  
(regular)  
*Flavia Bernardini, Ana Garcia, Inhauma Ferraz*

Providing Assistance during Decision-making Problems Solving in an Educational Modelling  
Environment (regular)  
*Panagiotis Politis, Ioannis Partsakoulakis, George Vouros, Christos Fidas*

A Fuzzy Knowledge-based Decision Support System for Tender Call Evaluation (short)  
*Panos Alexopoulos, Manolis Wallace, Konstantinos Kafentzis, Aristodimos Thomopoulos*

Extended CNP Framework for the Dynamic Pickup and Delivery Problem Solving (short)  
*Zoulei Kouki, Bisma Fayech Chaar, Mekki Ksouri*

**Session 3: Machine Sensing Algorithms & Applications** (Chair: L. Iliadis)

Computational Modeling of Visual Selective Attention Based on Correlation and Synchronization of Neural Activity (regular)  
*Kleanthis Neokleous, Christos Schizas*

Combining Gaussian Mixture Models and Support Vector Machines for Relevance Feedback in Content Based Image Retrieval (regular)  
*Apostolos Marakakis, Nikolaos Galatsanos, Aristidis Likas, Andreas Stafylopatis*

Two Levels Similarity Modelling: a Novel Content Based Image Clustering Concept (short)  
*Amar Djouak, Hichem Maaref*

Intelligent Modification of Colours in Digitized Paintings for Enhancing the Visual Perception of Color-blind Viewers (short)  
*Paul Doliotis, George Tsekouras, Christos-Nikolaos Anagnostopoulos, Vassilis Athitsos*

Locating an Acoustic Source Using a Mutual Information Beamformer (short)  
*Osama Alrabadi, Fotios Talantzis, Anthony Constantinides*

**Session 4: Intelligent Medical Applications** (Chair: I. Tsamardinos)

Background Extraction in Electron Microscope Images of Artificial Membranes (regular)  
*Argyro Karathanou, Jean-Luc Buessler, Hubert Kihl, Jean-Philippe Urban*

Enhanced Human Body Fall Detection Utilizing Advanced Classification of Video and Motion Perceptual Components (regular)  
*Charalampos Doukas, Ilias Maglogiannis, Nikos Katsarakis, Aristodimos Pneumatikakis*

An Evolutionary Technique for Medical Diagnostic Risk Factors Selection (regular)  
*Dimitrios Mantzaris, George Anastassopoulos, Lazaros Iliadis, Adam Adamopoulos*

Heterogeneous Data Fusion to Type Brain Tumor Biopsies (short)  
*Vangelis Metsis, Heng Huang, Fillia Makedon, Aria Tzika*

Automatic Knowledge Discovery and Case Management: an Effective Way to Use Databases to Enhance Health Care Management (short)  
*Luciana Kobus, Fabricio Enembreck, Edson Scalabrin, Joao Dias, Sandra Honorato*

**Session 5: Fuzzy Logic Techniques & Applications** (Chair: A. Tsadiras)

An Adaptive Resource Allocating Neuro-Fuzzy Inference System with Sensitivity Analysis Resource Control (regular)  
*Minas Pertselakis, Natali Raouzaiou, Andreas Stafylopatis*

An Intelligent Fuzzy Inference System for Risk Estimation Using Matlab Platform: the Case of Forest Fires in Greece (regular)  
*Theocharis Tsatalzinos, Lazaros Iliadis, Spartalis Stefanos*

A Formal Fuzzy Framework for Representation and Recognition of Human Activities (short)  
*Suphot Chunwiphat, Patrick Reignier, Augustin Lux*

Fuzzy Dependencies between Preparedness and Learning Outcome (short)

*Sylvia Encheva, Sharil Tumin*

Backing-up Fuzzy Control of a Truck-trailer Equipped with a Kingpin Sliding Mechanism

(short)

*Georgios Siamantas, Stamatis Manesis*

### **Session 6: Intelligent Commerce Applications**

(Chair: A. Papadopoulos)

Certified Trust Model (regular)

*Vanderson Botelho, Fabricio Enembreck, Braulio Avila, Edson Scalabrin, Hilton Azevedo*

Automated Product Pricing Using Argumentation (regular)

*Nikolaos Spanoudakis, Pavlos Moraitis*

A Hybrid Approach for Improving Prediction Coverage of Collaborative Filtering (regular)

*Manolis Vozalis, Angelos Markos, Konstantinos Margaritis*

User Recommendations Based on Tensor Dimensionality Reduction (regular)

*Panagiotis Symeonidis*

Adaptive Electronic Institutions for Negotiations (short)

*Manolis Sardis, George Vouros*

### **Session 7: Knowledge Representation & Reasoning**

(Chair: N. Bassiliades)

Sensing Inertial and Continuously-changing World Features (regular)

*Theodore Patkos, Dimitris Plexousakis*

Alternative Strategies for Conflict Resolution in Multi-Context Systems (regular)

*Antonis Bikakis, Grigoris Antoniou, Panayiotis Hassapis*

Towards Predicate Answer Set Programming via Coinductive Logic Programming (regular)

*Richard Min, Ajay Bansal, Gopal Gupta*

TELIOS: a Tool for the Automatic Generation of Logic Programming Machines (short)

*Alexandros Dimopoulos, Christos Pavlatos, George Papakonstantinou*

A Logic-based Approach to Solve the Steiner Tree Problem (short)

*Mohamed El Bachir Menai*

### **Session 8: Intelligent Web Applications**

(Chair: G. Antoniou)

Revealing Paths of Relevant Information in Web Graphs (regular)

*George Kouzas, Vassileios Koliass, Ioannis Anagnostopoulos, Eleftherios Kayafas*

On the Combination of Textual and Semantic Descriptions for Automated Semantic Web Service Classification (regular)

*Ioannis Katakis, Georgios Meditskos, Grigorios Tsoumakas, Nick Bassiliades, Ioannis Vlahavas*

Preferential Infinitesimals for Information Retrieval (regular)

*Maria Chowdhury, Alex Thomo, William Wadge*

OntoLife: an Ontology for Semantically Managing Personal Information (short)

*Eleni Kargioti, Efstratios Kontopoulos, Nick Bassiliades*

Visualizing RDF Documents (short)

*Aris Athanassiades, Efstratios Kontopoulos, Nick Bassiliades*

### **Session 9: Multi-Agent Techniques & Applications**

(Chair: A. Artikis)

A Multi-agent Task Delivery System for Balancing the Load in Collaborative Grid Environment (short)

*Mauricio Paletta, Pilar Herrero*

An Argumentation Agent Models Evaluative Criteria (short)

*John Debenham*

ASIC Design Project Management Supported by Multi Agent Simulation (short)

*Jana Blaschke, Christian Sebeke, Wolfgang Rosenstiel*

MEDICAL\_MAS: an Agent-Based System for Medical Diagnosis (short)

*Mihaela Oprea*

Experimental Evaluation of Multi-Agent Ontology Mapping Framework (short)

*Miklos Nagy, Maria Vargas-Vera*

AIR\_POLLUTION\_Onto: an Ontology for Air Pollution Analysis and Control (short)

*Mihaela Oprea*

### **Session 10: Machine Learning Algorithms**

(Chair: G. Tsoumakas)

Multi-Source Causal Analysis: Learning Bayesian Networks from Multiple Datasets (regular)

*Ioannis Tsamardinis, Asimakis P. Mariglis*

Model Identification in Wavelet Neural Networks Framework (regular)

*Achilleas Zaprani, Antonis Alexandridis*

Reconstruction-based Classification Rule Hiding through Controlled Data Modification (regular)

*Aliki Katsarou, Aris Gkoulalas-Divanis, Vassilios Verykios*

A Lazy Approach for Machine Learning Algorithms (short)

*Ines M. Galvan, Jose M. Valls, Nicolas Lecomte, Pedro Isasi*

GF-Miner: a Genetic Fuzzy Classifier for Numerical Data (short)

*Vicky Tsikolidaki, Nikos Pelekis, Yannis Theodoridis*

### **Session 11: Machine Learning Applications**

(Chair: V. Verykios)

Mining Patterns of Lung Infections in Chest Radiographs (regular)

*Spyros Tsevas, Dimitris Iakovidis, George Papamichalis*

Confidence Predictions for the Diagnosis of Acute Abdominal Pain (regular)

*Harris Papadopoulos, Alex Gammerman, Volodya Vovk*

Computer Log Anomaly Detection Using Frequent Episodes (short)

*Perttu Halonen, Markus Miettinen, Kimmo Hätönen*

A Genetic Algorithm for the Classification of Earthquake Damages in Buildings (short)

*Peter-Fotios Alvanitopoulos, Ioannis Andreadis, Anaxagoras Elenas*

Mining Retail Transaction Data for Targeting Customers with Headroom - a Case Study (short)

*Madhu Shashanka, Michael Giering*

### **Session 12: Knowledge Based Applications**

(Chair: I. Refanidis)

Behaviour Recognition Using the Event Calculus (regular)

*Alexander Artikis, George Paliouras*

MSRS - Critique on its Usability via a Path Planning Algorithm Implementation (regular)

*George Markou, Ioannis Refanidis*

A Knowledge Based System for Translating FOL Formulas into NL Sentences (short)

*Aikaterini Mpagouli, Ioannis Hatzilygeroudis*

Managing Diagnosis Processes with Interactive Decompositions (short)

*Quang-Huy Giap, Stéphane Ploix, Jean-Marie Flaus*

Defining a Task's Temporal Domain for Intelligent Calendar Applications (short)

*Anastasios Alexiadis, Ioannis Refanidis*

# Workshop Sessions

## Workshop 1: Workshop on Biomedical Informatics and Intelligent Approaches in the Support of Genomic Medicine (BMIINT)

### Welcome note

The AIAI2009/BMIINT workshop: Scope and overview of presentations  
*Vassilis Moustakis and George Potamias*

### Session 1: Integration of Biomedical Information & Data Sources

(Chair: V. Moustakis)

Homogenising access to heterogeneous biomedical data sources  
*Erwin Bonsma and Jeroen Vrijnsen*

COMBIOMED: A Cooperative Thematic Research Network on COMputational BIOMEDicine in Spain

*Fernando Martin-Sanchez, Victoria Lopez-Alonso, Isabel Hermosilla-Gimeno, Guillermo Lopez-Campos, and the COMBIOMED Network*

Building a System for Advancing Clinico-Genomic Trials on Cancer

*Stelios Sfakianakis, Norbert Graf, Alexander Hoppe, Stefan Ruping, Dennis Wegener, Lefteris Koumakis, and George Zacharioudakis*

Unification of heterogeneous data towards the prediction of oral cancer reoccurrence

*Konstantinos P. Exarchos, Yorgos Goletsis, Dimitrios I. Fotiadis*

Cross-platform integration of transcriptomics data

*Georgia Tsiliki, Marina Ioannou and Dimitris Kafetzopoulos*

### Session 2: Mining Clinico-Genomic Data Sources

(Chair: G. Potamias)

A Simple Algorithm Implementation for Pattern-Matching with Bounded Gaps in Genomic and Proteomic Sequences, on the Grid EGEE Platform, using an intuitive User Interface

*Vegoudakis K. I., Margaritis K. G., Maglaveras N.*

Discovery of Genotype-to-Phenotype Associations: A Grid-enabled Scientific Workflow Setting

*Lefteris Koumakis, Stelios Sfakianakis, Vassilis Moustakis, and George Potamias*

Method for relating inter-patient gene copy numbers variations with gene expression via gene influence networks

*Sylvain Blachon, Gautier Stoll, Carito Guziolowski, Andrei Zinovyev, Emmanuel Barillot, Anne Siegel and Ovidiu Radulescu*

Revealing Disease Mechanisms via Coupling Molecular Pathways Scaffolds and Microarrays: A Study on the Wilm's Tumor Disease

*Alexandros Kanterakis, Vassilis Moustakis, Dimitris Kafetzopoulos, and George Potamias*

**Roundtable discussion:** *'hot;-topics, roadmap, collaborations ...*

**Workshop 2: Workshop on Artificial Intelligence Approaches for Biometric Template Creation and Multibiometrics Fusion (ArtIBio)**

**Session 1: Multibiometrics: Databases, open issues and prospects for the future**

(Chair: N. Tsapatsoulis)

Behavioral biometrics (**invited speech**)

*Dimitrios Tzovaras, ITI/CERTH*

POLYBIO Multibiometrics database: Contents, description and interfacing platform

*Anixi Antonakoudi, Anastasis Kounoudes, Zenonas Theodosiou*

Facial Biometric Templates and Aging: Problems and Challenges for Artificial Intelligence

*Andreas Lanitis*

Applied surveillance using biometrics on Agents infrastructures

*Manolis Sardis, Vasilis Anagnostopoulos, Nikos Doulamis*

**Session 2: Artificial Intelligence methods for single modality biometrics**

(Chair: B. Dorizzi)

Gaussian Mixture Model Coupled with Independent Component Analysis for Palmprint Verification

*Raghavendra.R, Bernadette Dorizzi, Ashok Rao, Hemantha Kumar G.*

Support Vector Machines for Dynamic Biometric Handwriting Classification

*Tobias Scheidat, Marcus Leich, Mark Alexander, Claus Vielhauer*

Palm geometry biometrics: A score-based fusion approach

*Nicolas Tsapatsoulis, Constatinos Pattichis*

Unsupervised Human Members Tracking Based on an Silhouette Detection and Analysis Scheme

*Costas Panagiotakis, Anastasios Doulamis*

**Workshop 3: 2nd Workshop on Artificial Intelligence Techniques in Software Engineering (AISEW 2009)**

**Welcome note**

Introduction to AISEW

*I. Stamelos*

**Session 1: AI in SW Development**

(Chair: I. Stamelos)

Semantic annotation, publication and discovery of Java software components: an integrated approach

*Zinon Zygkostiots, Dimitris Dranidis, Dimitris Kourtesis*

Quality Classifiers for Open Source Software Repositories

*George Tsatsaronis, Maria Halkidi, Emmanouel Giakoumakis*

A probabilistic Approach for Change Impact Prediction in Object-Oriented Systems

*M.K. Abdi, H. Lounis, H. Sahraoui*

**Session 2: AI in SW Quality and Management**

(Chair: S. Bibi)

Improving Evolutionary Test Data Generation with the Aid of Symbolic Execution

*M. Papadakis and N. Malevris*

Reliable Confidence Intervals for Software Effort Estimation

*Harris Papadopoulos, Efi Papatheocharous and Andreas S. Andreou*

Bootstrap confidence intervals for regression error characteristic curves evaluating the prediction error of software cost estimation models

*Nikolaos Mittas, Lefteris Angelis*

Approaching Software Cost Estimation Using an Entropy-Based Fuzzy k-Modes Clustering Algorithm

*Efi Papatheocharous, Andreas S. Andreou*

## **Workshop Conclusion**

### **Workshop 4: Workshop on Artificial Intelligence Applications in Environmental Protection (AIAEP)**

#### **Invited Talk**

Artificial Intelligence Applications in the Atmospheric Environment: Status and Future Trends

*Kostas D. Karatzas*

**Session 1:** *Applications of machine learning techniques in environmental protection*

(Chair: M. Oprea)

Hydrological Neural Modeling aided by Support Vector Machines

*Lazaros Iliadis, Stefanos Spartalis*

Use of AI Techniques for Residential Fire Detection in Wireless Sensor Networks

*Majid Bahrepour, Nirvana Meratnia, Paul J. M. Havinga*

Estimation of the permeability of granular soils using neuro-fuzzy system

*A. Sezer, A.B. Goktepe, S. Altun*

A Data Mining System for Estimating a Large size Matrix for the Environmental Accounting

*Ting Yu, Manfred Lenzen, Blanca Gallego, John Debenham*

**Session 2:** *Decision support and knowledge-based systems for environmental protection*

(Chair: N. Bassiliades)

Autonomous Inspection Of Complex Environments by Means of Semantic Techniques

*M. Ziegenmeyer, K. Uhl, J.M. Zöllner, R. Dillmann*

Abductive Reasoning in Environmental Decision Support Systems

*Franz Wotawa, Ignasi Rodriguez-Roda, Joaquim Comas*

Supporting Decision Making in Maritime Environmental Protection with a Knowledge-based Education and Awareness Approach

*Konstantinos Kotis, Andreas Papasalouros, Nikitas Nikitakos*

Validation of a knowledge-based risk model for biological foaming in anaerobic digestion simulation

*J. Dalmau, J. Comas, I. Rodríguez-Roda, E. Latrille, J.P. Steyer*

An Environmental Diagnosis Expert System

*M. Oprea, D. Dunea*