



# **EPIA 2009**

## **14th Portuguese Conference on Artificial Intelligence**

### **Technical Program**

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**Hotel Meliá Ria, Aveiro, Portugal  
October 12-15, 2009**

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## EPIA 2009

### 14th Portuguese Conference on Artificial Intelligence

#### General Chairs

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# Thematic Tracks

## ***AITUM - Artificial Intelligence in Transportation and Urban Mobility***

**Chairs:** Rosaldo Rossetti, Ronghui Liu, Elisabete Arsénio, Jorge Lopes

The Thematic Track on Artificial Intelligence in Transportation and Urban Mobility (AITUM'2009) aims to promote an interdisciplinary debate on current developments and advances of AI theories, applications, and methodologies in a rather practical perspective, focusing on transportation and mobility systems. This Thematic Track follows up the first edition of the AIASTS Workshop, held at EPIA 2007, and will act as a unique platform gathering the AI community, transport practitioners, urban planners, the industry, and other social sciences' researchers to discuss how cutting-edge AI technologies can be effectively developed and applied to improve transportation performance and urban mobility towards sustainable systems. This forum is an opportunity to present progresses made so far, and a means to generate new ideas towards building innovative applications of AI technologies into smarter, greener and safer transportation systems, stimulating contributions that emphasise on how theory and practice are effectively coupled to solve real-life problems in contemporary transportation and urban scenarios.

### **Topics of Interest**

The AIT Thematic Track welcomes and encourages contributions reporting on original research, work under development and experiments of different AI techniques, such as neural networks, biologically inspired approaches, evolutionary algorithms, knowledge-based and expert systems, case-based reasoning, fuzzy logics, intelligent agents and multi-agent systems, support vector regression, data mining and other pattern-recognition and optimisation techniques, as well as ambient intelligence and ubiquitous computing, service-oriented architectures, and ontology, to address specific issues in contemporary transportation, which would include (but are not limited to):

- Different modes of transport and their interactions (air, road, rail and water transports)
- Intelligent and real-time traffic management and control
- Design, operation, time-tabling and management of logistics systems and freight transport
- Transport policy, planning, design and management
- Environmental issues, road pricing, security and safety
- Transport systems operation

- Application and management of new technologies in transport
- Travel demand analysis, prediction and transport marketing
- Traveller information systems and services
- Ubiquitous transport technologies and ambient intelligence
- Pedestrian and crowd simulation and analysis
- Urban planning toward sustainable mobility
- Service oriented architectures for vehicle-to-vehicle and vehicle-to-infrastructure communications
- Assessment and evaluation of intelligent transportation technologies
- Artificial transportation systems and simulation

## ***ALEA - Artificial Life and Evolutionary Algorithms***

**Chairs:** Agostinho Rosa, Luís Correia

ALEA'2009 is a thematic track of EPIA 2009, the portuguese conference in Artificial Intelligence, held in Aveiro, Portugal. This track is specifically dedicated both to the theory and application of Artificial Life (ALife) and Evolutionary Algorithms (EA). ALife and EA solutions have been gaining popularity in solving complex problems of different industrial, economical, and scientific domains. This thematic track is a good opportunity to gather researchers to present their latest research and to discuss current developments and applications. The format of the meeting will be designed to stimulate close interaction between members of these scientific communities. ALEA'2009 has the purpose of thriving to develop this research area in Portugal, through discussion among researchers and outstanding international scientists.

The thematic track will consist of an invited talk, oral presentations, panel, demonstration session (approval pending) and poster sessions and ample time for organised discussion. The best (the number is decided by APPIA Chairs) accepted papers will appear in the proceedings published by Springer in the LNAI series. The remaining accepted papers and posters will be published in a local edition, both in hard-copy, CD-ROM and on the web.

### **Topics of Interest**

- Genetic Algorithms
- Evolutionary Strategies
- Evolutionary Programming
- Genetic Programming
- Classifier Systems
- Evolutionary Robotics

- Parallel Evolutionary Algorithms
- Evolution Dynamics
- Artificial Immune Systems
- Ant Algorithms
- Cultural Algorithms
- Swarm Algorithms
- Evolutionary Social Systems
- Systems with emergent properties

## ***CMBSB - Computational Methods in Bioinformatics and Systems Biology***

**Chairs:** Miguel Rocha, Rui Camacho, Florentino Fdez-Riverola

The success of bioinformatics in recent years has been prompted by research in molecular biology and molecular medicine in initiatives like the human genome project. These initiatives gave rise to an exponential increase in the volume and diversification of data, including protein and gene data, nucleotide sequences and biomedical literature.

Systems Biology is a related research area that has been replacing the reductionist view that dominated biology research in the last decades, requiring the coordinated efforts of biological researchers with those related to data analysis, mathematical modelling, computer simulation and optimization.

The accumulation and exploitation of large-scale data bases prompts for new computational technology and for research into these issues. In this context, many widely successful computational models and tools used by biologists in these initiatives, such as clustering and classification methods for gene expression data, are based on Artificial Intelligence (AI) techniques.

In fact, these methods have been helping in tasks related to knowledge discovery, modelling and optimization tasks, aiming at the development of computational models so that the response of biological complex systems to any perturbation can be predicted. Hence, this workshop brings the opportunity to discuss applications of AI with an interdisciplinary character, exploring the interactions between sub-areas of AI, Bioinformatics and Systems Biology.

### **Topics of Interest**

Computational areas of interest include, but are not limited to:

- Knowledge Discovery and Data Mining techniques for the Analysis of high-throughput biological data (transcriptomics, proteomics, metabolomics, fluxomics)

- Text Mining and Language Processing
- Machine Learning and Pattern Recognition
- Rough, Fuzzy and Hybrid Techniques
- Hidden Markov Models
- Bayesian Approaches
- Artificial Neural Networks
- Support Vector Machines
- Evolutionary Computing
- Non-linear dynamical analysis methods and Intelligent signal processing
- Feature selection

Biological areas of interest include, but are not limited to:

- Sequence analysis, comparison and alignment methods
- Motif, gene and signal recognition
- Molecular evolution, phylogenetics and phylogenomics
- Determination or prediction of the structure of RNA and protein in two and three dimensions
- DNA twisting and folding
- Gene expression and gene regulatory networks
- Deduction of metabolic pathways
- Microarray design and analysis
- Proteomics
- Functional genomics
- Molecular docking and drug design
- Computational problems in genetics such as linkage and QTL analysis, linkage disequilibrium analysis in populations, and haplotype determination
- Molecular and cellular interactions
- Emergence of properties in complex biological systems
- Visualization of biological systems and networks
- Data and software integration
- In silico optimization of biological systems
- Metabolic engineering applications
- Cell simulation and modelling
- Metabolic, regulatory and signalling networks: properties, dynamics, inference and reverse engineering



## ***COLA - Computational Logic with Applications***

**Chairs:** Carlos Viegas Damásio, Fernando Silva

The integration of new complex intelligent systems requires more and more sound and appropriate foundations and tools, resulting in new problems and challenges for the computational logic practitioners. Computational logic has been widely used in complex applications in important areas such as the Deductive Databases, Natural Language Processing and Program Analysis, and more recently on the Semantic Web and related Web Tools. These novel applications have exposed the limits of existing approaches, showing the need for research on better languages and more sophisticated implementations of reasoning systems. The COLA thematic track of EPIA 2009 covers the broad area of Computational Logic and its applications, with special interest on topics related with new formalisms, environments, and applications. A list of non-exhaustive topics can be found below.

### **Topics of Interest**

- Logic based knowledge representation and applications
- Declarative semantics of rule languages and applications
- Program Analysis, Program Transformation, Validation and Verification, Debugging, Profiling
- Implementation of reasoning systems, in particular logic programming, contextual logic programming and tabling systems
- Abductive and Inductive Logic Programming
- Ontologies, Description Logics and integration with reasoning systems
- Reasoning with incomplete and uncertain information, including non-monotonic reasoning as well as probabilistic and fuzzy logic programming formalisms
- Reasoning on the Semantic Web
- Applications: Deductive Databases, Data Integration, Natural Language, Semantic Web, and Web Tools

## ***EAC - Emotional and Affective Computing***

**Chairs:** Goreti Marreiros, Andrew Ortony, Ana Paiva, Luis Antunes

The track on Emotional and Affective Computing (EAC) will focus on the role of affect, emotion and social behaviour in the development of computer systems. These include the consideration of factors like emotions, mood, personality traits, and attitudes in the human-computer, human-robot, and human-environment interaction, providing a better and more "natural" support for humans, and access to the

knowledge essential for making better decisions in response to interactions between individuals and the environments (e.g. facilitating social interaction among humans or among humans and artificial characters).

There is a wide variety of motivations for emotional and affective computing. Emotions and social behaviour play an important role in decision making processes, as well as in perception and learning.

Emotion and Affective Computing is a multidisciplinary field that brings together areas like for example, sociology, psychology, human-machine interaction, virtual environments, and, obviously, Artificial Intelligence. Furthermore, in this area we have a large set of different applications like for example: virtual reality, decision support, computer games, and ambient intelligence.

In the track on Emotional and Affective Computing we would like to bring together researchers to discuss theories, architectures and applications which are based on the combination of rational and affective aspects, and on the consideration of groups of persons, considering the personalities and their combination.

### **Topics of Interest**

- Computational models of emotions
- Emotion recognition
- Social Web
- Personality in Agents Architectures
- Emotion and learning
- Artificial characters
- Emotion and memory
- Emotion content classification and affect content classification, used to evaluate or analyse human-X interaction;
- Using reputation and trust models in social interactions
- Using negotiation and persuasion in social interactions
- Infrastructure and policy for affective computing
- Understanding and Modelling groups and other social systems
- Affective Computing
- Ambient Intelligence
- Social aspects of globally distributed computing and new cooperative work technologies
- New forms of education, entertainment and social relations based on cooperation technologies

## ***GAI - General Artificial Intelligence***

**Chairs:** Luís Seabra Lopes, Nuno Lau, Pedro Mariano, Luís Rocha

As in previous editions of the conference, EPIA 2009 will include a thematic track on General Artificial Intelligence which is focused on general methodologies and architectures for intelligent systems but will also accept submissions on subareas of artificial intelligence not covered by the other thematic tracks.

Of particular relevance to this track are papers on issues that arise in the design and construction of complex artificial intelligent agents, integrating such component technologies as planning, reasoning, language, dialogue, perception, goal-driven action, and learning. This includes, but is not limited to human-level intelligent agents. All available paths are welcome, including theoretical and experimental computer science, cognitive science, neuroscience, and innovative interdisciplinary methodologies.

### **Topics of Interest**

Including but not limited to:

- Foundations and Theory
- The Role of Embodiment in GAI
- Management of Complex Goal Structures
- Lifelong and Multi-Strategy Learning
- Case-by-case Problem-Solving
- Language Processing based on GAI
- Connecting Sensorimotor and Concept-level Cognition
- Coherence of Integrative/Hybrid Systems
- Evaluation and Comparison of GAI Projects
- Cognitive architectures
- Intelligent user interfaces
- Multimodal communication
- Virtual characters

## ***IROBOT - Intelligent Robotics***

**Chairs:** Luís Paulo Reis, Luís Correia, António J. R. Neves

Robotics, from the point of view of AI, has been an important application field, from which AI has also gained. Namely the dynamic and unforeseen nature of the environment, especially for mobile robots, has fostered research in these aspects of AI.

A continued point of discussion has been the cognitive versus reactive approaches which has contributed to the generation of interesting hybrid models, by combining the two approaches. This will constitute the focal theme of the IROBOT'2009 thematic track. IROBOT'2009 poses itself as a follow-up on the 1st, 2nd and 3rd International Workshops on Intelligent Robotics – IROBOT'2005 (held at EPIA'2005), IROBOT'2007 (held at EPIA'2007) and IROBOT'2008 (held at IBERAMIA'2008). As in previous editions, its main purpose is to bring together researchers, engineers and other professionals interested in the application of AI techniques in real/simulated robotics to discuss current work and future directions. Each edition tries to promote a focal debate theme.

This years edition will target the above referred “Cognitive versus Reactive approaches – hybridization is the solution?”. A related aspect will be explored, consisting on analysing these models from the point of view of stringent applications of mobile robots, in particular in robotic competitions. “Are the theoretical models of any use when real time competition is the goal?” These topics will be the subject of panel discussions led by well known researchers with vast experience in robotics and their different applications, in particular, mobile robot competitions. Nevertheless a non exhaustive list of topics that may be addressed is suggested next.

### **Topics of Interest**

- AI Planning for robotics
- Autonomous vehicles
- Cognitive Robotics
- Computer vision and object recognition
- Coordination in robotics
- Evolutionary robotics and reactive intelligence
- Human-robots interfaces
- Intelligent buildings and warehouses
- Intelligent transportation systems
- Learning and adaptation in robotics
- Mobile robot performance measures
- Modelling and simulating complex robots
- Multi-Robot systems
- Field Robots
- Real-time reactivity
- Robot behaviour engineering
- Robot Expressiveness and Emotional Awareness
- Robotic surveillance
- Sensor fusion

- Simulation and virtual reality systems in robotics

## ***KDBI - Knowledge Discovery and Business Intelligence***

**Chairs:** Nuno Marques, Paulo Cortez, João Moura Pires, Luís Cavique, Manuel Filipe Santos, Margarida Cardoso, Robert Stahlbock, Zbigniew Michalewicz

The aim of this thematic track is to gather the latest research in Knowledge Discovery (KD) and Business Intelligence (BI). We encourage papers that deal with the interaction with the end users, taking into account how easily one can understand data model's representation of extracted knowledge or encode expert knowledge, as well as its impact on real organizations. In particular, papers that describe experience and lessons learned from KD/BI projects and/or present business and organizational impacts using AI technologies, are welcome.

The amount of data representing the activities of organizations that is stored in databases is exponentially growing. Moreover, business organizations are increasingly moving towards decision-making processes that are based on information. Thus, pressure to extract as much useful information as possible from these data is very strong. Knowledge Discovery (KD) is a branch of the Artificial Intelligence (AI) field that aims to extract useful and understandable high-level knowledge from complex and/or large volumes of data. Business Intelligence (BI) is an umbrella term that represents computer architectures, tools, technologies and methods to enhance managerial decision making in public and corporate enterprises, from operational to strategic level.

KD and Data Mining (DM) are faced with new challenges. The temporal and spatial nature of the data generation demands new learning approaches, since samples' observations are no longer independent and the underlying regularities may change over time. New challenges are also to be considered when integrating background knowledge into the learning processes. Indeed, the success of hybrid models for knowledge understanding and the dead-end of several purely experimental methods in machine learning and DM are pointing to a more rationalistic view. In this context, the understanding of data and human mind emerges as crucial in combining KD with Cognitive Models. Namely, results in inductive logic or in neuro-symbolic methods seem to show the need of more knowledge aware models. Moreover, AI plays a crucial role in BI, providing methodologies to deal with prediction, optimization and adaptability to dynamic environments, in an attempt to offer support to better (more informed) decisions. In effect, several AI techniques can be used to address these problems, namely KD/DM, Evolutionary Computation and Modern Optimization, Forecasting, Neural Computing and Intelligent Agents.

## Topics of Interest

- Data Analysis, including Knowledge Discovery, Data Mining, Machine Learning and Statistical Methods
- Logic and Philosophy of Scientific Discovery and its relevance to Knowledge Discovery and Business Intelligence
- Hybrid Learning Models and Methods
- Domain Knowledge Discovery (e.g. Learning from Heterogeneous, Unstructured and Multimedia data, Networks, Graphs and Link Analysis)
- Cognitive Models including Human-machine interaction for Knowledge Discovery and Management
- Classification Regression and Clustering
- Methodologies, Architectures or Computational Tools for Business Intelligence
- Artificial Intelligence applied to Business Intelligence (e.g. Knowledge Discovery, Evolutionary Computation, Intelligent Agents, Fuzzy Logic)
- Data and Knowledge Visualization
- Temporal and Spatial Knowledge Discovery
- Data Pre-Processing Techniques for Knowledge Discovery and Business Intelligence
- Bio-inspired and other cognitive related models, namely Neural Networks.
- Bayesian Learning and Inductive Logic
- Incremental Learning, Change Detection and Learning from Ubiquitous Data Streams
- Adaptive Business Intelligence
- Data Warehouse and OLAP
- Intelligent Decision Support Systems
- Learning in Neuro-Symbolic and Neural Computation Systems
- Real-word Applications (e.g. Prediction/Optimization in Finance, Marketing, Sales, Production)

## ***MASTA - Multi-Agent Systems: Theory and Applications***

**Chairs:** Ana Paula Rocha, Paulo Urbano, Cesar Analide

Since 1993, the area of Multi-Agent Systems / Distributed Artificial Intelligence has been covered in the EPIA Conferences, either as individual tracks or the main conference or as autonomous workshops. Focusing on a fundamental subject of research in the scientific area of Artificial Intelligence, the 5th Edition on Multi-Agent Systems: Theory and Applications – MASTA 2009 thematic track will be, in the

context of EPIA'2009, the forum for presenting and discussing the most recent and innovative work in the area of multi-agent systems.

Departing, from the end of the 1980's, from the two main branches of Decentralized Artificial Intelligence and Distributed Problem Solving, research in Distributed Artificial Intelligence/Multi-Agent Systems has developed in areas of increasing specialisation and autonomy as diverse as agent-oriented programming and software engineering, cognitive modelling, swarm intelligence, coordination in MAS, social organisation modelling, social simulation, agent architectures among others.

Today, besides the existence of countless application areas, theoretical research in these topics has also a great activity and development. Being a young research area, a lot of work is still to be done, both on its foundations and on the methodological approaches that will allow for a better grounding of the results obtained.

### **Topics of Interest**

The purpose of this thematic track is to provide a discussion forum on the most recent and innovative work in the areas of multi-agent systems and autonomous agents.

The unifying focus of the thematic track will be on the methodological aspects. Both theoretical and practical research should be situated in the context of existing or new methodologies for developing agents and multi-agent systems. This will not preclude any specific topic, but preference will be given to research work that establishes some connection with the methodological aspects or to successful applications built upon some methodology.

Some topics of special interest are:

- Agent Architectures
- Agent Programming Languages
- Agent-Based Applications
- Agent-Oriented Software Engineering
- Automated Negotiation and Decision Making
- Artificial Social Systems
- Cognitive models, including emotions and philosophies
- Communication: languages, semantics, protocols and conversations
- Cooperation, Coordination and teamwork in MAS
- Electronic Institutions
- Ethical and Legal issues raised by Agents and MAS
- Formal Methods for Modelling Agent-Based Systems
- Industrial and Commercial Applications
- Multi-Agent Evolution, Adaptation and Learning
- Multi-Agent Simulation & Modelling

- Scalability and Performance of MAS
- Trust and Reputation in MAS

## ***SSM - Social Simulation and Modelling***

**Chairs:** Luis Antunes, Marco Janssen, Antonio Rocha Costa, Laszlo Gulyas

Social Simulation is a recent multi-disciplinary effort that has increasingly established new challenges for the Artificial Intelligence and Multiagent Systems community, by bringing the agent technology to face complex phenomena such as the ones found in social sciences. At the same time, social scientists have been discovering how the computer and especially the advances in artificial intelligence and multi-agent systems can provide a new and exciting tool to tackle the problems of their field, providing a paradigm shift in social sciences. The exchange between researchers in both areas has proven mutually fruitful, as much inspiration in Multiagent Systems has come from Social Sciences, and these have benefited from more rigorous and operational concepts as well as from principled methodologies with which to face experiments with heterogeneous artificial agents.

Social Simulation (SS) brings together the multi-agent systems (MAS) and agent-based modelling (ABM) communities. The focus of MAS is on the solution of complex problems related to the construction, deployment and efficient operation of agent-based systems, while the focus of ABM is on simulating and synthesising social behaviours in order to understand real social systems (human, animal and even digital) via the development and testing of new theories. Both these communities are now well-established and have many common issues, but there are few opportunities for crossover of ideas between the two communities.

This track aims at presenting the most recent advances in multi-agent-based exploratory social simulation from a strong computer science and Artificial Intelligence stance. To promote a multi-disciplinary and cross-influential approach, this workshop will focus both on ideas coming from Artificial Intelligence as a new technology to provide insights into ABM community and the ideas coming from social sciences as new metaphors to provide insights into MAS community.

### **Topics of Interest**

General Issues:

- Agent and social environment modelling
- Standards for social simulators including inter-operability
- Self-organisation, scalability, robustness in SS
- Policy applications
- SS applications



- Methodologies and techniques that link MAS and ABM works

MAS issues:

- Grid-computing for SS
- Visualisation and analytic tools
- Managing interactions in large-scale systems
- Simulation languages and formalisms
- Complexity

ABM issues:

- Formal and agent-based models of social behaviour and social order
- Social structures and norms
- Cognitive modelling and social simulation
- The emergence of co-operation and co-ordinated action
- Agent-based experimental economics

## ***TEMA - Text Mining and Applications***

**Chairs:** Joaquim Francisco Ferreira da Silva, José Gabriel Pereira Lopes, Gaël Dias, Vitor Jorge Ramos Rocio

The track of Text Mining and Applications is a forum for researchers working in natural language processing (NLP), computational linguistics (CL), Machine Learning (ML) and related areas. Pure symbolic methods for Language Processing alone are unable to address human languages complexity. Text Mining and Machine Learning techniques applied to text, raw or annotated, brought up new insights and completely shifted the approaches to Human Language Technologies. Both approaches, symbolic and statistical based, when duly integrated, bridge the gap between language theories and effective use of languages, and enable important applications. Our aim, with this workshop, is to bring together innovative contributions to fill in this gap.

### **Topics of Interest**

Text Mining:

- Language Models
- Multi-word Units
- Lexical Knowledge Acquisition
- Word and Multi-word Sense Disambiguation
- Semantic Restrictions Extraction
- Acquisition and Usage of Ontologies in Text Mining
- Pattern Extraction methodologies

- Topic Segmentation
- Word and Multi-word Translation Extraction
- Sentiment Analysis
- Text Entailment
- Document Clustering and Classification
- Algorithms and Data Structures for Text Mining
- Information Extraction

Applications:

- Natural Language Processing
- Example-Based/Statistical Machine Translation
- Automatic Summarization
- Intelligent Information Retrieval
- Multilingual access to multilingual information
- Question-Answering Systems
- E-training and E-learning

## ***WNI - Web and Network Intelligence***

**Chairs:** Joaquim Francisco Ferreira da Silva, José Gabriel Pereira Lopes, Gaël Dias, Vitor Jorge Ramos Rocio

The Web, and Networks in general, provide very important applications for Artificial Intelligence. While the area of Web Intelligence brings together Web Mining, Information Retrieval and Web Analysis, the growing social interaction in Web sites demands for more powerful models for representing Web structure and dynamics, such as Complex Networks and Graphs. At the same time, Complex Networks and Graphs are being used to approach non trivial problems in other areas such as Social Network Analysis, Telecommunications, Health, Ecology, etc. Known developments in Web and Network Intelligence are self adaptive Web sites, usage monitoring, Web site personalization, social network analyses, community detection, automatic Web site organization, large document collection mining and exploration, visualization, usability and others. The Web and Network Intelligence EPIA09 track will gather researchers who work on methods and theories (and their applications) that help us to understand the Web and to build automatic tools for better exploiting its complex world. We also would like to bring together researchers who develop new network-based approaches that contribute to AI in general and to Web Intelligence in particular.

This track is a follow up of the 1st International Workshop on Web and Text Intelligence which took place in Salvador, Brazil, October 2008, as a workshop of SBIA08. WTI focused on Web and Text. In EPIA there is a specific thematic track

specialized in Text, so the focus of WNI is on mainly Web and Networks. However, contributions dealing with text and the Web or text and Networks may be also relevant here.

**Topics of Interest**

- Web mining
- Visual Web mining
- Link mining
- Web usability
- Web automation and adaptation
- Web content mining
- Multi media Web mining
- Recommender systems for the Web
- Focused crawling
- Community detection
- Social network mining and analysis
- Graph mining
- Complex networks

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## Invited Talks

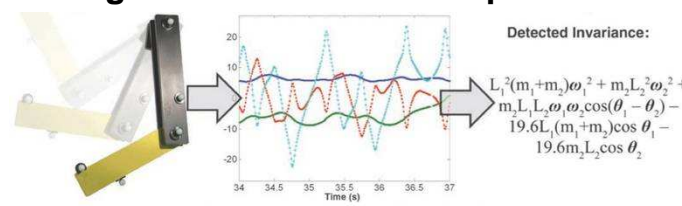
### **Hod Lipson**

Cornell University, USA

<http://www.mae.cornell.edu/lipson>



### **The Robotic Scientist: Mining experimental data for dynamical invariants, from cognitive robotics to computational biology**



### **Abstract**

For centuries, scientists have attempted to identify and document analytical laws that underlie physical phenomena in nature. Despite the prevalence of computing power, the process of finding natural laws and their corresponding equations has resisted automation. A key challenge to finding analytic relations automatically is defining algorithmically what makes a correlation in observed data important and insightful. By seeking dynamical invariants, we go from finding just predictive models to finding deeper conservation laws. We demonstrated this approach by automatically searching motion-tracking data captured from various physical systems, ranging from simple harmonic oscillators to chaotic double-pendula. Without any prior knowledge about physics, kinematics, or geometry, the algorithm discovered Hamiltonians, Lagrangians, and other laws of geometric and momentum conservation. The discovery rate accelerated as laws found for simpler systems were used to bootstrap explanations for more complex systems, gradually uncovering the "alphabet" used to describe those systems. Application to modeling physical and biological systems will be shown.

### **Short CV**

Hod Lipson is an Associate Professor of Mechanical & Aerospace Engineering and Computing & Information Science at Cornell University in Ithaca, NY. He directs the Computational Synthesis group, which focuses on novel ways for automatic design, fabrication and adaptation of virtual and physical machines. He has led work in areas such as evolutionary robotics, multi-material functional rapid prototyping, machine self-replication and programmable self-assembly. Lipson received his Ph.D. from the Technion - Israel Institute of Technology in 1998, and continued to a postdoc at

Brandeis University and MIT. His research focuses primarily on biologically-inspired approaches, as they bring new ideas to engineering and new engineering insights into biology.

### ***Marie-Francine Moens***

Katholieke Universiteit Leuven, Belgium

<http://www.cs.kuleuven.be/~sien/>



## **More than Just Words: Discovering the Semantics of Text with a Minimum of Supervision**

### **Abstract**

Humans discover many different aspects of meaning in sources such as text, speech, audio and visual data. We retrieve certain information from them, which is used in our daily actions and decisions. Machines can assist in these tasks when they mine, summarize or aggregate content from the digital sources. We can train pattern recognizers to discover the semantics of the sources, but a major bottleneck is the lack of sufficient annotated examples, as a manual labeling is often prohibitively expensive. A multitude of semantic classes can be recognized from the surface features and the variation of surface features that express a similar meaning is usually high, making the task not easier.

In this talk we explore the possibilities of reducing training examples when recognizing semantics in text. We discuss approaches of unsupervised expansion of the training set, multiple instance learning, active learning and unsupervised language modeling, and study their impact on semantic classification of text. We illustrate the approaches by our own research on relationship detection, semantic role labeling, opinion extraction and argumentation mining. We demonstrate that the large amounts of data that can be cheaply collected (e.g., on the World Wide Web) assist in recognizing the targeted information. Linguistic and cognitive theories can guide us in the selection of appropriate features and seed training examples.

### **Short CV**

Marie-Francine Moens is associate professor at the Department of Computer Science of the Katholieke Universiteit Leuven, Belgium. She holds a Ph.D. degree in Computer Science (1999) from this university. She currently leads a research team of 1 postdoctoral fellow and 9 doctoral students, and is currently coordinator of or partner in 7 European or international research projects in the fields of information retrieval and text mining. Her main interests are in the domain of automated content retrieval from texts with a strong emphasis on probabilistic content models obtained through machine learning techniques. Since 2001 she teaches the course Text Based Information Retrieval and since 2009 she partly teaches the courses Natural Language

Processing and Current Trends in Databases at K.U.Leuven. She has (co-)authored more than 150 research papers in the field of information retrieval and text analysis, is author of two monographs published in the Springer International Series on Information Retrieval, and is (co-)editor of several books. She is the (co-)organizer of 3 editions of the KRAQ Knowledge and Reasoning for Answering Questions conferences (respectively at IJCAI 2005, COLING 2008 and ACL 2009), of the ACM SIGKDD Workshop on Cybersecurity and Intelligence Informatics (KDD 2009), and the Cross-media Information Access and Mining workshop (IJCAI-AAAI 2009). She is currently appointed as chair-elect of the European Chapter of the Association for Computational Linguistics (2009-2010).

### ***Demetri Terzopoulos***

University of California, Los Angeles, USA

<http://www.cs.ucla.edu/~dt/>



## **Artificial Life Simulation of Humans and Lower Animals: From Biomechanics to Intelligence**

### **Abstract**

The confluence of virtual reality and artificial life, an emerging discipline that spans the computational and biological sciences, has yielded synthetic worlds inhabited by realistic artificial flora and fauna. The latter are complex synthetic organisms with functional, biomechanically-simulated bodies, sensors, and brains with locomotion, perception, behavior, learning, and cognition centers. These biomimetic autonomous agents in their realistic virtual worlds foster deeper computationally-oriented insights into natural living systems. Virtual humans and lower animals are of great interest in computer graphics because they are self-animating graphical characters poised to dramatically advance the motion picture and interactive game industries. Furthermore, they engender interesting new applications in computer vision, medical imaging, sensor networks, archaeology, and many other domains.

### **Short CV**

Demetri Terzopoulos (PhD '84 MIT) is the Chancellor's Professor of Computer Science at UCLA. He is a Guggenheim Fellow, a Fellow of the ACM, a Fellow of the IEEE, a Fellow of the Royal Society of Canada, and a member of the European Academy of Sciences. One of the most highly cited authors in engineering and computer science, his numerous awards include an Academy Award for Technical Achievement from the Academy of Motion Picture Arts and Sciences for his pioneering research on physics-based computer animation, and the inaugural Computer Vision Significant Researcher Award from the IEEE for his pioneering and sustained research on deformable models and their applications.

# General Schedule

	Monday 12 Oct	Tuesday 13 Oct	Wednesday 14 Oct	Thursday 15 Oct
8:30	SDIA	Invited Talk	Invited Talk	Invited Talk
9:45		Coffee Break	Coffee Break	Coffee Break
10:15		IROBOT 1	Nectar 1	TEMA 1
10:40		KDBI 1		ALEA 1
11:05		GAI 1	Nectar 2	MASTA 1
11:30		Short Break		Short Break
11:45		IROBOT 2	Nectar 3	TEMA 2
12:10		KDBI 2		ALEA 2
12:35		GAI 2	Lunch	MASTA 2
13:00		Lunch		Lunch
14:00	Opening Session	IROBOT 3	Nectar 3	TEMA 3
14:30	AITUM 1			
14:55	SSM 1	KDBI 3	Nectar 4	COLA 1
15:20		WNI		MASTA 3
15:45	Coffee Break	Coffee Break	Nectar 5	Coffee Break
16:10	CMBSB	KDBI Panel		TEMA 4
16:40	AITUM 2	IFIP TC12 / WG12.3 Open Session	APPIA General Assembly	COLA 2
17:05	SSM 2	EAC		MASTA 4
17:30			Conference Banquet	Closing Session
17:55				
18:20				
18:45				
19:10				
19:35				
20:00				
20:30				
21:00				

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# Monday, October 12, 2009

## **SDIA (8:30 - 16:40)**

Room: S. Tomás

## **EPIA'2009 Opening Session (14:00 - 14:30)**

Room: S. Pedro II

## **AITUM-1 (14:30 - 16:10)**

Room: S. Pedro II

Chair: Jorge Lopes

- *Genetic Algorithm for the Calibration of Vehicle Performance Models of Microscopic Traffic Simulators*  
André Luiz Cunha, José Elievam Bessa Jr., and José Reynaldo Setti
- *Simulating Communication in a Service-Oriented Architecture for V2V Networks*  
João F. B. Gonçalves, Edgar F. Esteves, Rosaldo J. F. Rossetti, and Eugénio C. Oliveira
- *Applying Event Stream Processing on Traffic Problem Detection*  
Oliver Pawlowski, Jürgen Dunkel, Ralf Bruns, and Sascha Ossowski
- *Prediction of Congested Traffic on the Critical Density Point Using Machine Learning and Decentralised Collaborating Cameras*  
Wouter Labeeuw, Kurt Driessens, Danny Weyns, Tom Holvoet, and Geert Deconinck

## **SSM-1 (14:30 - 16:10)**

Room: S. Pedro III

Chair: Luis Antunes

- *Games on Cellular Spaces: An Evolutionary Approach*  
Pedro Ribeiro de Andrade, Antonio Miguel Vieira Monteiro, and Gilberto Câmara
- *A Critical Study of the Coherence between EBMs and ABMs in the Simulation of the Hawks-Doves-LawAbiders Society*  
Fernanda Mendez Jeannes and Antônio Carlos da Rocha Costa



- *On the Intelligence of Moral Agency*  
Helder Coelho and Antônio Carlos da Rocha Costa
- *Fuzzy Evaluation of Social Exchanges Between Personality-based Agents*  
Graçaliz Pereira Dimuro, A.V. Santos, B.C. Bedregal, and Antônio Carlos da Rocha Costa

### **Coffee Break (16:10 - 16:40)**

### **CMBSB (16:40 - 17:30)**

Room: S. Pedro I

Chair: Rui Camacho

- *Syntactic Parsing for Bio-Molecular Event Detection from Scientific Literature*  
Sérgio Matos, Anabela Barreiro, and José Luis Oliveira
- *Approximate 3D Motif Search in Proteins with Domain Specific Knowledge*  
Arno Formella, Thorsten Pöschel, and Cástor Sánchez Chao

### **AITUM-2 (16:40 - 17:55)**

Room: S. Pedro II

Chair: Elisabete Arsénio

- *Minimizing Airport Peaks Problems by Improving Airline Operations Performance through an Agent Based System*  
António J.M. Castro, António Mota, Luís Paulo Reis, and Eugénio Oliveira
- *Evaluating Policies for Reservation-Based Intersection Control*  
Matteo Vasirani and Sascha Ossowski
- *Intelligent Transportation Systems: a Ubiquitous Perspective*  
Lúcio Sanchez Passos and Rosaldo J. F. Rossetti

### **SSM-2 (16:40 - 17:55)**

Room: S. Pedro III

Chair: Antônio Rocha Costa

- *Context Switching versus Context Permeability in Multiple Social Networks*  
Luis Antunes, Davide Nunes, Helder Coelho, João Balsa, and Paulo Urbano
- *A Multi-Agent Model for Panic Behavior in Crowds*  
Robson dos Santos França, Maria das Graças Bruno Marietto, and Margarethe Born Steinberger

- *Risk Tolerance and Social Awareness: Adapting Deterrence Sanctions to Agent Populations*  
Henrique Lopes Cardoso and Eugénio C. Oliveira

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## Tuesday, October 13, 2009

### ***Invited Talk (8:30 - 9:45)***

Room: S. Pedro I+II

Chair: Luís Rocha

- *The Robotic Scientist: Mining experimental data for dynamical invariants, from cognitive robotics to computational biology*  
Hod Lipson

### ***Coffee Break (9:45 - 10:15)***

### ***IROBOT-1 (10:15 - 11:30)***

Room: S. Pedro I+II

Chair: Luís Correia

- *Embodied Language Acquisition: a Proof of Concept*  
Aneesh Chauhan, Amanda Nascimento, Bruno Werneck, and Luís Seabra Lopes
- *Multirobot Task Assignment in Active Surveillance*  
Nelson Gonçalves and João Sequeira
- *MODEN: Obstacle-driven Elastic Network for Line-of-Sight Communication*  
Francisco S. Melo and Manuela Veloso

### ***KDBI-1 (10h15 - 11h30)***

Room: S. Pedro III

Chair: Paulo Cortez

- *An Extension of the Core Method for Continuous Values: Learning with Probabilities*  
Nuno C. Marques
- *Exploiting Generalized Association Rules*  
Marcos Aurélio Domingues and Solange Oliveira Rezende
- *Construction of a Local Domain Ontology from News Stories*  
Brett Drury and J. J. Almeida

### **GAI-1 (10:15 - 11:30)**

Room: S. João

Chair: Pavel Brazdil

- *Learning Visual Object Categories with Global Descriptors and Local Features*  
Rui Pereira and Luís Seabra Lopes
- *Bringing Relevant Topics to Foster Learning with the Aid of Ontologies*  
Elaine Harada Teixeira de Oliveira, Erika Handa Nozawa, Rosa Maria Vicari, and Alberto Nogueira de Castro Júnior
- *An Intelligent Interface Agent for an Airline Company Web Portal*  
Luís Barbosa, António J.M. Castro, and Luís Paulo Reis

### **Short Break (11:30 - 11:45)**

### **IROBOT-2 (11:45 - 13:00)**

Room: S. Pedro I+II

Chair: Luís Correia

- *NeatSqueak on Wheels: Neural Networks Applied to Movement Optimization*  
Hugo Peixoto, João Portela, Rui Teixeira, Filipe Castro, and Luís Paulo Reis
- *Using Accelerometers to Command a Cleaning Service Robot*  
Armando Sousa and Luís Paulo Reis
- *Towards a Spatial Model for Humanoid Social Robots*  
Dario Figueira, Manuel Lopes, Rodrigo Ventura, and Jonas Ruesch

### **KDBI-2 (11:45 - 13:00)**

Room: S. Pedro III

Chair: Luís Cavique

- *Tracking Recurring Concepts with Meta-Learners*  
João Gama and Petr Kosina
- *A Study on Change Detection Methods*  
Raquel Sebastião and João Gama
- *Knowledge Discovery Methodology for Medical Reports*  
Vitor Pinheiro and Victor Alves

## **GAI-2 (11:45 - 13:00)**

Room: S. João

Chair: Pedro Barahona

- *Restoring CSP Satisfiability with MaxSAT*  
Inês Lynce and João Marques-Silva
- *Colored Nanograms: an Integer Linear Programming Approach*  
Luís Mingote and Francisco Azevedo
- *An Evaluation of Heuristic Functions for Bicriterion Shortest Path Problems*  
E. Machuca, L. Mandow and J.L. Pérez de la Cruz

## **Lunch (13:00 - 14:30)**

## **IROBOT-3 (14:30 - 16:10)**

Room: S. Pedro I+II

Chair: António J. R. Neves

- *Intelligent Robotic Mapping and Exploration with Converging Target Localization*  
João Certo, João Lobato Oliveira, and Luís Paulo Reis
- *Robustness and Precision Analysis in Map-Matching based Mobile Robot Self-Localization*  
Manuel Gouveia, António Paulo Moreira, Paulo Costa, Luís Paulo Reis, and Marcos Ferreira
- *Environment Mapping using the Lego Mindstorms NXT and leJOS NXJ*  
Gerardo Oliveira, Ricardo Silva, Tiago Lira, and Luís Paulo Reis
- *Using BarCodes as Robotic Landmarks*  
Armando Sousa, Catarina Santiago, Paulo Malheiros, Paulo Costa, and António Paulo Moreira

## **KDBI-3 (14:30 - 16:10)**

Room: S. Pedro III

Chair: Nuno Marques

- *Detecting Errors in Foreign Trade Transactions: Dealing with Insufficient Data*  
Luis Torgo, Welma Pereira, and Carlos Soares
- *An Intelligent Alarm Management System for Large-Scale Telecommunication Companies*  
Raúl Costa, Nuno Cachulo, and Paulo Cortez

- *Histogram Based Payload Processing for Unsupervised Anomaly Detection Systems in Network Intrusion*  
Iñigo Perona, Iñaki Albisua, Olatz Arbelaiz, Ibai Gurrutxaga, José I. Martín, Javier Muguerza, and Jesús M. Pérez
- *An Algorithm to Discover the k-Clique Cover in Networks*  
Luís Cavique, Armando B. Mendes, and Jorge M. A. Santos

### **WNI (14:30 - 16:10)**

Room: S. João

Chair: Carlos Soares

- *Item-Based and User-Based Incremental Collaborative Filtering for Web Recommendations*  
Catarina Miranda and Alípio Mário Jorge
- *An Ultra-Fast Modularity-Based Graph Clustering Algorithm*  
Leonardo Jesus Almeida and Alneu de Andrade Lopes
- *An Updated Portrait of the Portuguese Web*  
João Miranda and Daniel Gomes
- *Improving Web User Experience with Document Activity Sparklines*  
Sérgio Nunes, Cristina Ribeiro and Gabriel David

### **Coffee Break (16:10 - 16:40)**

### **IROBOT-4 (16:40 - 18:45)**

Room: S. Pedro I+II

Chair: Luís Paulo Reis

- *Analysis and Forecast of Team Formation in the Simulated Robotic Soccer Domain*  
Rui Almeida, Luís Paulo Reis, and Alípio Mário Jorge
- *Predictive Control for Behavior Generation of Omni-Directional Robots*  
João Cunha, Nuno Lau, João Rodrigues, Bernardo Cunha, and José Luís Azevedo
- *Control and Monitoring of a Robotic Soccer Team: The Base Station Application*  
Nuno M. Figueiredo, António J. R. Neves, Nuno Lau, Artur Pereira, and Gustavo Corrente
- *Obstacle Detection, Identification and Sharing on a Robotic Soccer Team*  
João Silva, Nuno Lau, António J. R. Neves, João Rodrigues, and José Luís Azevedo

- *A Cooperative CiberMouse@RTSS08 Team*  
João Azevedo, Miguel Oliveira, Pedro Pacheco, and Luís Paulo Reis

***KDBI Panel (16:40 - 17:05)***

Room: S. Pedro III

Chair: Manuel Filipe Santos

***EAC (16:40 - 18:20)***

Room: S. João

Chair: Andrew Ortony

- *Personality, Emotion and Mood Simulation in Decision Making*  
Ricardo Santos, Goreti Marreiros, Carlos Ramos, José Neves, and José Bulas-Cruz
- *A Formal Model of Emotion-based Action Tendency for Intelligent Agents*  
Bas R. Steunebrink, Mehdi Dastani, and John-Jules Ch. Meyer
- *An Emotion-Driven Interactive System*  
Francisco Ventura, António Oliveira, and Amílcar Cardoso
- *An Emotional and Context-Aware Model for Adapting RSS News to Users and Groups*  
Eugénia Vinagre, Goreti Marreiros, Carlos Ramos, and Lino Figueiredo

***IFIP TC 12 / WG 12.3 Open Session (17:05 - 19:00)***

Room: S. Pedro III

Chair: Helder Coelho

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## Wednesday, October 14, 2009

### ***Invited Talk (8:30 - 9:45)***

Room: S. Pedro I+II

Chair: Gabriel Pereira Lopes

- *More than Just Words: Discovering the Semantics of Text with a Minimum of Supervision*  
Marie-Francine Moens

### ***Coffee Break (9:45 - 10:15)***

### ***Nectar-1 (10:15 - 11:30)***

Room: S. Pedro I+II

Chair: Luís M. Rocha

- *Cost-Sensitive Learning Vector Quantization for Credit Scoring*  
Ning Chen, Armando S. Vieira, João Duarte, Bernardete Ribeiro, and João C. Neves
- *Efficient Coverage of Case Space with Active Learning*  
Nuno Filipe Escudeiro and Alípio Mário Jorge
- *Semantic Image Search and Subset Selection for Classifier Training in Object Recognition*  
Rui Pereira, Luís Seabra Lopes, and Augusto Silva

### ***Short Break (11:30 - 11:45)***

### ***Nectar-2 (11:45 - 13:00)***

Room: S. Pedro I+II

Chair: Helder Coelho

- *A Data-Fusion Approach to Representing Personality Traits, Values, Beliefs and Behavior Descriptions*  
Boon-Kiat Quek, Kayo Sakamoto, and Andrew Ortony
- *How Much Should Agents Remember? The Role of Memory Size on Convention Emergence Efficiency*  
Paulo Urbano, João Balsa, Paulo Ferreira Jr., and Luis Antunes



- *Sensitivity Analysis of a Tax Evasion Model Applying Automated Design of Experiments*  
Attila Szabó, László Gulyás, and István János Tóth

**Lunch (13:00 - 14:30)**

**Nectar-3 (14:30 - 16:35)**

Room: S. Pedro I+II

Chair: Luís Correia

- *Constraint-Based Strategy for Pairwise RNA Secondary Structure Prediction*  
Olivier Perriquet and Pedro Barahona
- *Type Parametric Compilation of Algebraic Constraints*  
Marco Correia and Pedro Barahona
- *Using Operator Equalisation for Prediction of Drug Toxicity with Genetic Programming*  
Leonardo Vanneschi and Sara Silva
- *Comparing Different Properties Involved in Word Similarity Extraction*  
Pablo Gamallo Otero
- *Roles, Positionings and Set Plays to Coordinate a RoboCup MSL Team*  
Nuno Lau, Luís Seabra Lopes, Nelson Filipe, and Gustavo Corrente

**APPIA General Assembly (18:00 - 19:30)**

Location: Estalagem Quinta do Louredo, Espinhel, Águeda

**Conference Banquet (20:00 - )**

Location: Estalagem Quinta do Louredo, Espinhel, Águeda

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## Thursday, October 15, 2009

### ***Invited Talk (8:30 - 9:45)***

Room: S. Pedro I+II

Chair: Agostinho Rosa

- *Artificial Life Simulation of Humans and Lower Animals: From Biomechanics to Intelligence*  
Demetri Terzopoulos

### ***Coffee Break (9:45 - 10:15)***

### ***TEMA-1 (10:15 - 11:30)***

Room: S. Pedro I+II

Chair: Pablo Gamallo

- *A Document Descriptor Extractor Based on Relevant Expressions*  
Joaquim Ferreira da Silva and Gabriel Pereira Lopes
- *Phrase Translation Extraction from Aligned Parallel Corpora Using Suffix Arrays and Related Structures*  
José Aires, Gabriel Pereira Lopes, and Luís Gomes
- *Relations Extracted from a Portuguese Dictionary: Results and First Evaluation*  
Hugo Gonçalo Oliveira, Diana Santos, and Paulo Gomes

### ***ALEA-1 (10:15 - 11:30)***

Room: S. Pedro III

Chair: Agostinho Rosa

- *Instability in Spatial Evolutionary Games*  
Carlos Grilo and Luís Correia
- *Agent-Based Model of Aedes Aegypti Population Dynamics*  
Carlos Isidoro, Nuno Fachada, Fábio Barata, and Agostinho Rosa
- *How to Build the Network of Contacts Selecting the Cooperative Partners*  
Pedro Mariano, Luís Correia, and Carlos Grilo

### **MASTA-1 (10:15 - 11:30)**

Room: S. João

Chair: César Analide

- *Agent Inferencing Meets The Semantic Web*  
Paulo Trigo, Helder Coelho
- *Knowledge Acquisition and Intelligent Agency on the Web of Data*  
Elder Santos, Rosa Vicari, Helder Coelho
- *Towards a Learning Agent Architecture for Cross-Map Transfer*  
Cédric Herpson, Vincent Corruble

### **Short Break (11:30 - 11:45)**

### **TEMA-2 (11:45 -13:00)**

Room: S. Pedro I+II

Chair: Victor Rocio

- *Classifying Documents According to Locational Relevance*  
Ivo Anastácio, Bruno Martins, and Pável Calado
- *Multi-Label Hierarchical Text Classification Using the ACM Taxonomy*  
António Paulo Santos and Fátima Rodrigues
- *Combining Unigrams and Bigrams in Semi-Supervised Text Classification*  
Igor Assis Braga, Maria Carolina Monard, and Edson Takashi Matsubara

### **ALEA-2 (11:45 - 13:00)**

Room: S. Pedro III

Chair: Luís Correia

- *Predicting the Outcome of Mutation in Genetic Algorithms*  
Sandeep Rajoria, Carlos Soares, Jorge Pinho de Sousa, and Joydip Dhar
- *A Tool for Automatic Routing of Auxiliary Circuits in Ships*  
Paulo Triunfante Martins and Victor J. A. S. Lobo
- *Genetic Algorithms Using Populations Based on Multisets*  
António Manso and Luís Correia

### **MASTA-2 (11:45 - 12:35)**

Room: S. João

Chair: Eugénio Oliveira

- *A Flexible Agent-Based Framework to Control Virtual Characters*  
Luis Moniz, Graca Gaspar, Ana Cláudio, Beatriz Carmo, Ricardo Abreu
- *Modeling Autonomous Adaptive Agents with Functional Language for Simulations*  
Richard Legendi, Laszlo Gulyas , Tamás Máhr, Rajmund Bocsi

### **Lunch (13:00 - 14:30)**

### **TEMA-3 (14:30 - 16:10)**

Room: S. Pedro I+II

Chair: Gabriel Pereira Lopes

- *Sentiment Classification across Domains*  
Dinko Lambov, Gaël Dias, and Veska Noncheva
- *The Design of OPTIMISM, an Opinion Mining System for Portuguese Politics*  
Mário J. Silva, Paula Carvalho, Luís Sarmento, Pedro Magalhães, and Eugénio Oliveira
- *Topic-Related Polarity Classification of Blog Sentences*  
Michael Wiegand and Dietrich Klakow
- *Recognizing Polarity and Attitude of Words in Text*  
Laritz Hernández, A. López-Lopez, and José E. Medina

### **COLA-1 (14:30 - 16:10)**

Room: S. Pedro III

Chair: Vítor Santos Costa

- *Intention Recognition via Causal Bayes Networks plus Plan Generation*  
Luís Moniz Pereira and Han The Anh
- *Learning and Reasoning about Uncertainty in the Semantic Web*  
Pedro Oliveira and Paulo Gomes
- *An ILP system for learning Head Output Connected predicates*  
José C. A. Santos, Alireza Tamaddon-Nezhad, and Stephen Muggleton
- *A Logic Programming System for Evolving Programs with Temporal Operators*  
José Júlio Alferes, Alfredo Gabaldon, and João Leite

### **MASTA-3 (14:30 - 16:10)**

Room: S. João

Chair: Helder Coelho

- *Recovering from Airline Operational Problems with a Multi-Agent System: a Case Study*  
Antonio Castro, Antonio Mota, Luís Paulo Reis
- *DarkBlade: a program that plays Diplomacy*  
Pedro Mariano, Luís Seabra Lopes, João Ribeiro
- *Computing Confidence Values: Does Trust Dynamics Matter?*  
Joana Urbano, Ana Paula Rocha, Eugénio Oliveira
- *EcoSimNet: a Multi-Agent System for Ecological Simulation and Optimization*  
António Pereira, Luís Paulo Reis, Pedro Duarte

### **Coffee Break (16:10 - 16:40)**

### **TEMA-4 (16h40 - 18:20)**

Room: S. Pedro I+II

Chair: Joaquim F Silva

- *Relieving Polysemy Problem for Synonymy Detection*  
Gaël Dias and Rumen Moraliyski
- *Parallel Texts Alignment*  
Luís Gomes, José Aires, and Gabriel Pereira Lopes
- *Extraction of Definitions in Portuguese: An Imbalanced Data Set Problem?*  
Rosa Del Gaudio and António Branco
- *Standardisation of Hotel Descriptions Using Information Extraction Techniques*  
Nuno Miranda, Ricardo Raminhos, Pedro Seabra, José Saias, Teresa Gonçalves, and Paulo Quaresma

### **COLA-2 (16h40 - 18:20)**

Room: S. Pedro III

Chair: Fernando Silva

- *On Improving the Efficiency of Deterministic Calls and Answers in Tabled Logic Programs*  
Miguel Areias and Ricardo Rocha

- *On Just In Time Indexing of Dynamic Predicates in Prolog*  
Vitor Santos Costa
- *Using a Contextual Logic Programming Language to Access Data in Warehousing Systems*  
Valéria Pequeno, Salvador Abreu, and João Carlos Moura Pires
- *Tabling for P-log probabilistic query evaluation*  
Han The Anh, Caroline Kencana Ramli, and Carlos Viegas Damásio

### **MASTA-4 (16:40-17:55)**

Room: S. João

Chair: João Balsa

- *A Study of Agents with Self-awareness for Collaborative Behavior*  
Sheng Wen Wang, Chuen-Tsai Sun, Chung-Yuan Huang
- *A Formal Notion of Objective Expectations in the Context of MAS Routines*  
Antonio Rocha Costa, Graçaliz Dimuro, Julie Dugdale, Yves Demazeau
- *Telecommunications Fraud: Problem analysis - an agent-based KDD perspective*  
Eugénio Rosas, Cesar Analide

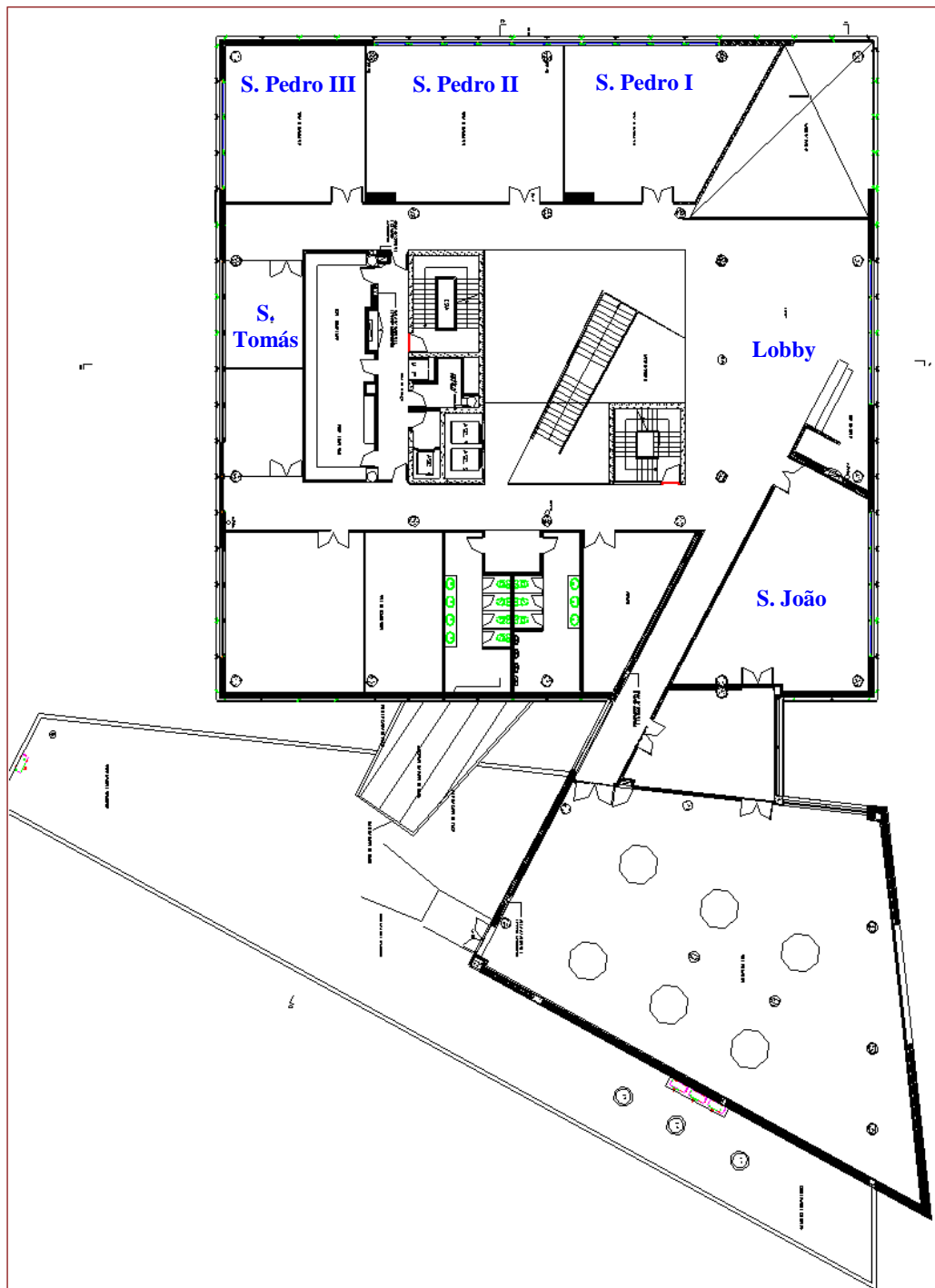
### **Closing Session (18:20-18:50)**

Room: S. Pedro I+II

# Venue information

## Conference rooms

The conference will take place in the 1st floor of Hotel Meliá Ria. Here is a map of the used rooms:



## Banquet

The conference banquet will take place in Estalagem Quinta do Louredo, Piedade-Espinhel, Águeda. Buses will be available for transportation of participants to and from the banquet. Those going there directly can find directions here:

