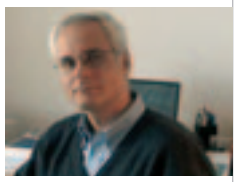

George Vouros,
SETN 04 Chair

Themistoklis Panayiotopoulos
EETN Chair

Dear Colleague,

You are cordially welcome to the 3rd Hellenic Conference on Artificial Intelligence, 5-8 May 2004, Samos Greece.

Artificial Intelligence has attracted a renewed interest and has again raised new, more realistic this time, expectations for future advances regarding the development of theories, models and techniques and the use of them both in practice and in applications, pervading many areas of our daily life.

SETN conferences play an important role in the dissemination of the innovative and high-quality scientific results in Artificial Intelligence, which are being produced mainly by Greek scientists in institutes all over the world. However, the most important effect of SETN conferences is that they provide the context in which people meet and get to know each other, as well as a very good opportunity for students to get closer to the results of innovative Artificial Intelligence research.

SETN 2004 was organized by the Hellenic Society for Artificial Intelligence and the Artificial Intelligence Laboratory of the Department of Information and Communication Systems Engineering, the University of the Aegean.

We wish to express our sincere thanks to the sponsors of the conference, the University of the Aegean and its School of Sciences for their generous support.

The aims of the conference are:

- To present the high-quality results in Artificial ntelligence research which are being produced mainly by Greek scientists in institutes all over the world.
- To bring together Greek researchers who work actively in the field of Artificial Intelligence and push forward collaborations.
- To put senior and postgraduate students in touch with the issues and problems currently addressed by Artificial Intelligence.
- To make industry aware of new developments in Artificial Intelligence so as to push forward the development of innovative products.

Artificial Intelligence is a dynamic field whose theories, methods and techniques constantly find their way into new innovative applications, bringing new perspectives and challenges for research. The growth in the information over load which makes necessary its effective management, the complexity of human activities in relation to the constant change of the environment in which these activities take place, the constantly changing technological environment, as well as the constant need for learning point to the development of systems that are more oriented to the way humans reason and act in social settings. Recent advances in Artificial Intelligence give us answers to these new lands of intelligence.

The contributed papers in SETN 04 Proceedings were selected by the program committee, with the invaluable help of additional reviewers.13% of the submitted papers were submitted and co-authored by members of non-Greek institutions. Many thanks to all who submitted papers for review and for publication in the proceedings.

Members of the SETN 2004 program committee did an enormous amount of work and deserve the special gratitude of all participants. Our sincere thanks to the Conference Advisory Board for their help and support.

Dynamic Discovery, Invocation and Composition of Semantic Web Services

Katia P. Sycara
School of Computer Science
Carnegie Mellon University

Abstract. While the Web is the largest World Wide repository of digitized information, by and large, the very same information is not available for automatic computation. In recent years two parallel efforts emerged that have the potential of overcoming this paradox: the first effort is the Semantic Web which provides the tools for the explicit markup of the content of Web pages so they can be computer understandable; the second effort is the development of Web Services which results in a Web where programs act as independent agents to become the producers and consumers of information and enable automation of business transactions.

In this paper we present research that bridges the gap between the Web as we know it, the Semantic Web and Web services. We present the vision of Semantic Web services as autonomous goal-directed agents which select other agents to interact with, and flexibly negotiate their interaction model. In particular, we present our work on run time semantic discovery of Web services, Web service invocation and composition.

Dr. Sycara is a Principal Research Scientist (Professor) in the Robotics Institute in the School of Computer Science at Carnegie Mellon University. She is also the Director of the Advanced Agent Technology Laboratory. She is also affiliated with the Human Computer Interaction Institute, the Language Technology Institute, and the Center for Advanced Learning and Discovery. She is directing/conducting research and developing technology for intelligent software agents, e-commerce and integrating organizational decision-making.

Constraint Satisfaction, Complexity, and Logic
Phokion G. Kolaitis

Computer Science Department
University of California, Santa Cruz

Abstract. Constraint satisfaction problems constitute a broad class of algorithmic problems that are ubiquitous in several different areas of computer science and artificial intelligence. In their full generality, constraint satisfaction problems are NP-complete and, hence, presumed to be algorithmically intractable. For this reason, extensive research efforts have been devoted to the pursuit of "islands of tractability" of constraint satisfaction, that is, special cases of constraint satisfaction problems for which polynomial-time algorithms exist.

The aim of this talk is to present an overview of recent advances in the investigation of the computational complexity of constraint satisfaction with emphasis on the connections between "islands of tractability" of constraint satisfaction, database theory, definability in finite-variable logics, and structures of bounded treewidth.

Phokion Kolaitis was previously an instructor at the University of Chicago, a faculty member at Occidental College,a visiting faculty member at Stanford University, and a visiting scientist at the IBM Almaden Research Center. In 1993, he was awarded a John Simon Guggenheim Memorial Foundation Fellowship. His research interests include logic in computer science, computational complexity, and database theory.

	Wednesday May 5,2004	Thursday May 6, 2004		Friday May 7, 2004		Saturday May 8, 2004
		Sivylla Room	Dido Room	Sivylla Room	Dido Room Sivylla Room	
09:00		**Constraint Satisfaction, Complexity and Logic** Phokion Kolaitis		**Dynamic Discovery, Invocation and Composition of Semantic Web Services** Katia Sycara		
10:00		**Information Management I** Chair: T.Panayiotopoulos	**Applications** Chair: I. Hatzilygeroudis	**Machine Learning II** Chair: G.Paliouras	**Information Management III** Chair : C.Douligeris	**Intelligent Techniques in Image Processing** Chair: I.Maglogiannis
		Taxonomy-based Annotation of XML Documents: Application to eLearning Resources B.Gueye, P.Rigaux, N.Spyratos **Precise photo retrieval on the web with a fuzzy logic/neural network meta-search engine.** I.Anagnostopoulos, C. Anagnostopoulos, G.Kouzas, D.Vergados **Intelligent Web Prefetching based upon User Profiles – The WebNaut Case** G.Kastaniotis, N. Zacharis, T.Panayiotopoulos, C.Douligeris **Clustering XML Documents by Structure** T. Dalamagas, T.Cheng, K.J.Winkel, T.Sellis	**A Multi-Agent Technology Approach to Medium Voltage Power Distribution Systems Protection** I.S.E.Baxevanos, D.P.Labridis **Acoustic-Emission Source Location in typical structures using Genetic Algorithms** E.Lympertos, V.Kappatos, E.Dermatas **A Multi-Agent System to Automate Human Gene Prediction by Integrating Heterogeneous Computational Tools** V.Koutkias, A.Malousi, I.Chouvarda, N.Maglaveras **Novel Fitness Functions in Genetic Algorithms for Human Immune System Simulation** C.Giannoulis, G.Beligianis, L.Skarlas, S.Likothanassis, I.Hatzilygeroudis **A Fuzzy Logic Approach to Congestion Avoidance Techniques in TCP** C.Douligeris, P.Kostopoulos, G.Develekos **Dynamic Access Control Management Using Expert System Technology** G. Pangalos, G. Vakaros, Ch. Georgiadis, I. Nestori, K. Kemalis	**Music Performer Verification Based on Learning Ensembles** E. Stamatatos, E. Kavallieratou **Using the k Nearest Problems for Adaptive Multicriteria Planning** G.Tsoumakas, D.Vrakas, N.Bassiliades, I.Vlahavas **Focused Crawling using Tempral Difference-Learning** A.Grigoriadis, G.Paliouras, **A Meta-classifier Approach for Medical Diagnosis** G.L.Tsirogiannis, D.Frossyniotis, K.S. Nikita, A.Stafylopatis	**Agglomerative Hierarchical Clustering for Musical Database Visualization and Browsing** A.S.Lambropoulos, G.A. Tsihrintzis **Modeling Information Extraction Wrappers with Conceptual Graphs** F.Kokkoras, N.Bassiliades, I.Vlahavas **Using Branching-Time Logic to Optimize an Extended Class of datalog Queries** P.Potikas, M.Gergatsoulis, P.Rondogiannis, **CrawlWave: A Distributed Crawler** A.Kritikopoulos, M.Sideri, K.Stroggilos **Comparing Point and Block Representation in Computer Vision and Image Processing Tasks** B.Gatos, N.Papamarkos, S.J.Perantonis **On the Combination of Collaborative and Item-Based Filtering** M.Vozalis, K.G.Margaris **A Cognitive Approach to Personalized Web Directories** G.D.Magoulas, S.Y.Chen, D.Dimakopoulos	**Automated Medical Image Registration Using the Simulated Annealing Algorithm** I. Maglogiannis, E. Zafiropoulos **Adaptive Rule-Based Facial Expression Recognition** S.Ioannou, A. Raouzaiou, K.Karpouzis, M.Pertselakis, S.Kollias **Locating Text in Historical Collection Manuscripts** B.Gatos, I.Pratikakis, S.J.Perantonis **Semi-automatic extraction of semantics from football video sequences** V.Tzouvaras, G.Stamou, S.Kollias
11:40		**Coffee Break**		**Coffee Break**		
12:05		**Information Management II** Chair : I.Vlahavas	**Search** Chair: I.Refanidis	**Data Mining & Diagnosis** Chair: D.Kalles	**Agents and Multi-Agent Systems** Chair: F.Makedon	
		An Intelligent System for Aerial Image Retrieval and Classification A. Gasteratos, P.Zafeiridis, I.Andreadis **Computationally Intelligent Methods for Mining 3D Medical Images** D.Kontos, V.Megalooikonomou, F.Makedon **Text Area Identification in Web Images** S. Perantonis, B. Gatos, V. Maragos, V. Karkaletsis, G. Petasis **A Mixed Reality Learning Environment for Geometry Education** G.Nikolakis, G.Fergadis, D.Tzovaras, M.G.Strintzis	**Construction and repair: A hybrid approach to search in CSPs** K.Chatzikokolakis, G.Boukeas, P.Stamatopoulos **Arc Consistency in Binary Encodings of Non-Binary CSPs: Theoretical and experimental evaluation** N.Samaras, K.Stergiou **Inherent choice in the search space of constraint satisfaction problem instances** G.Boukeas, P.Stamatopoulos, C.Halatsis, V. Zissimopoulos	**Gene Selection via Discretised Gene-Expression Profiles and Greedy Feature-Elimination** G.Potamias, L.Koumakis, V.Moustakis **Automatic Detection of Abnormal Tissue in Bilateral mammograms Using Neural Networks** I. Christoyianni, E. Constantinou, E. Dermatas **Feature selection for robust detection of distributed Denial-of-Service attacks using genetic algorithm** D.Gavrilis, I.Tsoulos, E.Dermatas **An Intelligent tool for Bio-Magnetic Signal Processing** L.Skarlas, A.Adamopoulos, S.Georgopoulos, S.Likothanassis	**A Multi-Criteria Protocol for Multi-Agent Negotiations** N.F.Matsatsinis, P. Delias **Data Brokers: Building Collections through Automated Negotiation** F.Makedon, S.Ye, S.Zhang, J.Ford, L.Shen, S.Kapidakis **P2P-DIET: Ad-hoc and Continuous Queries in Peer-to-Peer Networks using Mobile Agents** S.Idreos, M.Koubarakis **Towards an Imitation System for Learning Robots** G.Maistros, G.Hayes	
14:00		**Lunch Break**		**Lunch Break**		

	Wednesday May 6, 2004	Thursday May 6, 2004		Friday May 7, 2004	
	Sivylla Room	Sivylla Room	Dido Room	Sivylla Room Dido Room	
16:00		**Information Management I** Chair:K.Spyropoulos	**Knowledge Representation I** Chair: S. Perantonis	**Machine Learning III** Chair: V.Moustakis	**Natural Language Processing I** Chair: K.Stergiou
		Learning In-Between Concept Descriptions Using Iterative Induction G.Potamias, V.Moustakis **Splitting data in decision trees using the new 'False-Positives' criterion.** B.Boutsinas, I.X.Tsekouronas **Efficient Training Algorithms for the Probabilistic RBF Network** C. Constantinopoulos, A.Likas **Using k-nearest neighbor and feature selection as an improvement to hierarchical clustering** P.Mylonas, M.Wallace, S.Kollias	**Simple Distributed Filtering on a CLP Platphorm** I.Sakellariou, I.Vlahavas **Towards a General Purpose Intelligent Agent-Oriented Programming Language** G.Anastassakis, T.Panayiotopoulos	**Feature deforming for improved similarity based learning** S. Petridis, S. J.Perantonis **Incremental Mixture Learning for Clustering Discrete Data** K.Blekas, A.Likas **A Cost Sensitive Technique for Ordinal Classification Problems** S.B.Kotsiantis, P.E.Pintelas **Pap-Smear Classification using Efficient Second Order Neural Network Training Algorithms** N.Ampazis, G.Dounias, J.Jantzen	**Using Natural Language Generation to support Interactive Concept Mapping** H.Kornilakis, K.A.Papanikolaou, E.Gouli **Representing Knowledge in a Reflective Tutorial Dialogue System for Historical text Comprehension** M.Grigoriadou, G.Tsaganou, T.Cavoura **Combination of Machine Learning Approaches for Error Reduction in POS Tagging** M.Koutsombogera, A.Kostandinidis, H.Papageorgiou
			Cognitive Modelling Chair: S. Perantonis		**Learning Environments** Chair: K.Stergiou
17:00	**Annual Hellenic Artificial intelligence Society Members Meeting**		**Accelerating the Hamming MAXNET** K.Koutroumbas **Piecewise continuous approximation of two-dimensional functions using neural networks** I.G. Tsoulos, I.E.Lagaris, A.Likas **Time-Decaying Representations of Streaming Time Series** T.Palpanas, M.Vlachos, E.Keoch, D.Gunopoulos, W.Truppel **Adding Reasoning and Cognition to the Internet** M. Sifalakis, M. Mavrikis, G. Maistros		**Accelerating the Hamming MAXNET.** K.Koutroumbas **Pythagoras: A 3D Interactive Geometry Learning Environment** G.Vafiadis, C.Aggelopoulos, V.Moulos, I.Pratikakis **Improving the Effectiveness of Interactive Open Learning Environments** M.Mavrikis **PROTEIN: A Procedural Textural Authoring Tool** I.Makris, I.Pratikakis
17:40	**Coffee Break**				**Coffee Break**
18:00	**AI in Power System Operation and Fault Diagnosis** Chair: N. Hatziargyriou	**Knowledge Representation II** Chair: M.Koubarakis	**Intelligent Virtual Environments** Chair: T.Panayiotopoulos	**Natural Language Processing II** Chair: V.Karkaletsis	**Classification, Machine Learning Prediction** Chair: S.Likothanassis
	Diagnosing Transformer Faults with Petri Nets J. Katsigiannis, P. S. Georgilakis, A. T. Souflaris, K. P. Valavanis **Short-Term Load Forecasting Using Radial Basis Function Networks** Z. Gontar, G. Siderator, N. Hatziargyriou **Reinforcement Learning (RL) to Optimal Reconfiguration of Radial Distribution System (RDS)** J. G. Vlachogiannis, N. D. Hatziargyriou **A Multi-Agent System for Microgrids** A. Dimeas, N. Hatziargyriou	**Hierarchical Bayesian Networks : An approach to classification and learning for structured data** E. Gyftodimos, P. A.Flach **Fuzzy automata for fault diagnosis : A syntactic analysis approach** G.G.Rigatos, S.G.Tzafestas **Knowledge representation using a modified Earley's algorithm** C.Pavlatos, I.Panagopoulos, G.Papakonstantinou **A discussion of some intuitions of defeasible reasoning** G. Antoniou **Fuzzy Causal maps in business modelling and performance-driven process re-engineering** G.Xirogiannis, M.Glykas	**Agents and affect: why embodied agents need affective systems** R. S. Aylett **Control and Autonomy for Intelligent Virtual Agent Behaviour** D. Thalmann **Synthetic Characters with Emotional State** N.Avradinis, T.Panayiotopoulos, S.Vossinakis **Reflex Movements for a Virtual Human: a Biology Inspired Approach** M. Gutierrez, F. Vexo, D. Thalmann **Integrating miniMin-HSP agents in a dynamic simulation framework** M. Lozano, F. Grimaldo, F. Barber **Emergent Narrative, requirements and high-level architecture** S.Louchart, R.Aylett **Aiming for a Roshomon Storyteller** R.Ramirez, J.Blat	**Text Normalization for the pronunciation of Non-Standard Words in an Inflected Language** G.Xydas, G.Karberis, G.Kouroupetroglou **Multi-topic Information Filtering with a Single User Profile** N.Nanas, V.Uren, A.de Roeck, J.Dominigue **Exploiting Cross-Document Relations for Multi-Document Evolving Summarization** S.Afantenos, I.Doura, E.Kapellou, V.Karkaletsis **Part of Speech Tagging in Molecular biology Scientific Abstracts using Morphological and Contextual Statistical Information** G.Dimitris, E. Dermatas **A Name Matching Algorithm for Supporting Ontology Enrichment** A. Valarakos, G. Paliouras, V. Karkaletsis, G. Vouros	**Efficient Mining of Uncertainty Rules using Adaptive Thresholds in Medical Data** S.Konias, P.Bamidis, N.Maglaveras **Building Decision Trees with Components** S.Christodoulou, K.Hantzara, D.Kalles, A.Papagelis **Evolutionary Conditional Rules for Signal prediction** A.Adamopoulos, E.Georgopoulos, S.Lokothanassis **Inter-Transaction Association Rules Mining for Rare Events Prediction** C.Berberidis, L.Angelis, I.Vlahavas **Classification of Abnormal Tissue in Digital Mammography Using Support Vector machine** I.Christoyianni, G.Georgoulas **Machine Learning Techniques for Prediction of Rare Events in a Business Environment** S.Daskalaki, I.Kopanas, N.Avouris **Using Hierarchical Clustering to Enhance Classification Accuracy** M.Theodorakis, A.Vlachos, T.Z.Kalamboukis **Classification of Cardiograms based on Independent Component Analysis and Support Vector Machines** G.Georgoulas, C.Stylios, P.P.Groumpos **Automated Expert Knowledge Base Generation Using Genetic Programming.** A.Tsakonas, G.Dounias
19:45	**Opening**				**Panel Session**
21:00		**Dinner**			

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SETN 04 Samos

Department of Information and Communication Systems Engineering

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Hellenic Artificial Intelligence Society

3rd Hellenic Conference on Artificial Intelligence

SETN 04
SAMOS

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Conference Program