Preface

Artificial intelligence has attracted a renewed interest from distinguished scientists 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 in applications pervading many areas of our daily life. The borders of human-level intelligence are still very far away and possibly unknown. Nevertheless, recent scientific work inspires us to work even harder in our exploration of the unknown lands of intelligence.

This volume contains papers selected for presentation at the 3rd Hellenic Conference on Artificial Intelligence (SETN 2004), the official meeting of the Hellenic Society for Artificial Intelligence (EETN). The first meeting was held in the University of Piraeus, 1996 and the second in the Aristotle University of Thessaloniki (AUTH), 2002.

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. The conference took place on the island of Samos during 5–8 May 2004. We wish to express our thanks to the sponsors of the conference, the University of the Aegean and the School of Sciences, for their generous support.

The aims of the conference were:

- To present the high-quality results in artificial intelligence 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 overload 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 may give us answers to these new questions in intelligence.

The 41 contributed papers were selected from 110 full papers by the program committee, with the invaluable help of additional reviewers; 13% of the submitted papers were co-authored by members of non-Greek institutions. We must emphasize the high quality of the majority of the submissions. Many thanks to all who submitted papers for review and for publication in the proceedings.

This proceedings volume also includes the two prestigious papers presented at SETN 2004 by two distinguished keynote speakers:

- "*Dynamic Discovery, Invocation and Composition of Semantic Web Services*" by Prof. Katia Sycara (School of Computer Science, Carnegie Mellon University); and
- "*Constraint Satisfaction, Complexity, and Logic*" by Prof. Phokion Kolaitis (Computer Science Department, University of California, Santa Cruz).

Three invited sessions were affiliated with the conference:

- *AI in Power System Operation and Fault Diagnosis*, Assoc. Prof. Nikos Hatziargyriou (Chair);
- *Intelligent Techniques in Image Processing*, Dr. Ilias Maglogiannis (Chair);
- *Intelligent Virtual Environments*, Assoc. Prof. Themis Panagiotopoulos (Chair).

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 its help and support.

Special thanks go to Alfred Hofmann and Tatjana Golea of Springer-Verlag for their continuous help and support.

May 2004   George Vouros
                                                    Themis Panayiotopoulos

Organization

SETN 2004 is organized by the department of Information and Communication Systems Engineering, Univeristy of the Aegean and EETN (Hellenic Association of Artificial Intelligence).

Conference Chair

George Vouros (University of the Aegean)

Conference Co-chair

Themis Panagiotopoulos (University of Piraeus)

Organizing Committee

George Anastasakis (University of Piraeus)
Manto Katsiani (University of the Aegean)
Vangelis Kourakos-Mavromichalis (University of the Aegean)
Ioannis Partsakoulakis (University of the Aegean)
Kyriakos Sgarbas (University of Patras)
Alexandros Valarakos (University of the Aegean)

Advisory Board

Nikolaos Avouris (University of Patras)
Ioannis Vlahavas (Aristotle University of Thessalonica)
George Paliouras (National Centre for Scientific Research "DEMOKRITOS")
Costas Spyropoulos (National Centre for Scientific Research "DEMOKRITOS")
Ioannis Hatzyligeroudis (Computer Technology Institute (CTI) and University of Patras)

Program Committee

Ioannis Androustopoulos (Athens University of Economics and Business)
Grigoris Antoniou (University of Crete)
Dimitris Christodoulakis (Computer Technology Institute (CTI))
Ioannis Darzentas (University of the Aegean)
Christos Douligeris (University of Piraeus)
Giorgos Dounias (University of the Aegean)

Theodoros Evgeniou (INSEAD, Technology Dept., France)
Nikos Fakotakis (University of Patras)
Eleni Galiotou (University of Athens)
Manolis Gergatsoulis (Ionian University)
Dimitris Kalles (Hellenic Open University and AHEAD Relationship Mediators Company)
Giorgos Karagiannis (Technical University of Athens)
Vangelis Karkaletsis (National Centre for Scientific Research "DEMOKRITOS")
Sokratis Katsikas (University of the Aegean)
Elpida Keravnou (University of Cyprus)
Giorgos Kokkinakis (University of Patras)
Manolis Koubarakis (Technical University of Crete)
Spyridon Lykothanasis (University of Patras)
Giorgos Magoulas (University of Brunel, England)
Filia Makedon (University of the Aegean and Dartmouth College)
Basilis Moustakis (Foundation for Research and Technology-Hellas (FORTH))
Christos Papatheodorou (Ionian University)
Giorgos Papakonstantinou (Technical University of Athens)
Stavros Perantonis (National Centre for Scientific Research "DEMOKRITOS")
Ioannis Pittas (University of Thessaloniki)
Stelios Piperidis (Institute for Language and Speech Processing)
Dimitris Plexousakis (University of Crete)
Giorgos Potamias (Foundation for Research and Technology-Hellas (FORTH))
Ioannis Refanidis (University of Macedonia)
Timos Sellis (Technical University of Athens)
Panagiotis Stamatopoulos (University of Athens)
Kostas Stergiou (University of the Aegean)
George Tsichrintzis (Univeristy of Piraeus)
Petros Tzelepithis (Kingston University)
Maria Virvou (University of Piraeus)
Vasilis Voutsinas (University of Piraeus)

Additional Referees

Adam Adamopoulos
Stergos Afantenos
Nikos Ambazis
Nikos Bassiliades
Grigorios Beligiannis
Christos Berberidis
George Boukeas
Evagelos Dermatas
Gang Feng
Vassilis Gatos

Efstratios Georgopoulos
Ioannis Giannikos
Theodoros Gnardellis
Eleni Golemi
Chris Hutchison
Keterina Kabassi
Ioannis Kakadiaris
Sarantos Kapidakis
Fotis Kokkoras
George Kormentzas

D. Kosmopoulos
Eirini Kotsia
Martha Koutri
Konstantinos Koutsojiannis
Michalis Krinidis
Michalis Lagoudakis
Aristomenis Lambropoulos
Maria Moundridou
Ruediger Oehlmann
Charles Owen
George Petasis
Christos Pierrakeas
Dimitris Pierrakos
Vasileios Plagiannakos
Ioannis Pratikakis
Dimitris Prentzas
Panagiotis Rontogiannis
Elias Sakellariou
Nikos Samaras

George Sigletos
Spyros Skiadopoulos
Dionysios Sotiropoulos
Ioanna-Ourania Stathopoulou
Ioannis Stavrakas
George Stefanidis
Manolis Terrovitis
Athanasios Tsakonas
Ioannis Tsamardinos
Nikolaos Tselios
Victoria Tsiriga
Loukas Tsironis
Nikos Vassilas
Nikolaos Vayatis
Ioannis Vetsikas
Kyriakos Zervoudakis
Vossinakis Spyros
Avradinis Nikos

Springer