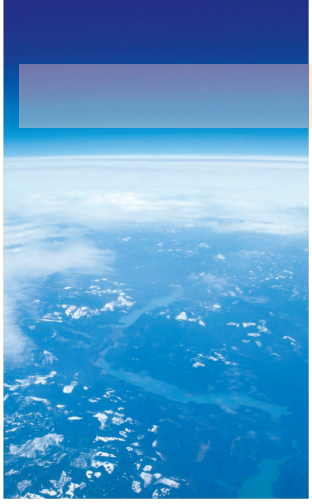

Editor: **Alun Preece,** University of Aberdeen, apreece@csd.abdn.cs.uk

AI in Greece

George A. Vouros, *University of the Aegean*

It's a great time for AI. New uses for intelligent products and services, in conjunction with advances in networking and hardware, are creating new challenges and new promises in the ways technology will enhance life. AI technology transfer has resulted in many exciting success stories worldwide, in such domains as robotics, language technology, information integration, content management, entertainment, and social interactions, just to mention some of the boldest ones.

A major driving force is—allow me to put this in a single word—funding. Funding drives academia and industry to jointly produce intelligent products for society's benefit.

History

The intelligence in these products hides important small and big pieces of intelligence that were invented in both the recent and the "ancient" history of AI and computing. Practical and theoretical knowledge about searching, problem solving, planning, scheduling, machine learning, natural language processing, agents, robotics (see Figure 1), knowledge representation, and reasoning has started to accumulate, providing mature techniques that constitute the mainstream of today's AI teaching material. However, AI's growth has resulted in partitioning the field into separate research areas, each with its own prominent conferences and journals, each showing restricted interest in interaction or integration with other niche areas. I believe, as others do, that integrating all of AI will advance the field a long way.

The history of AI is more or less captured in the history of the Hellenic Artificial Intelligence Society, whose Greek acronym is EETN (see "The Hellenic AI Society" sidebar). The organization began 20 years ago with a few people's vision to expand AI research in Greece. Today its large and growing number of members, including graduate and postgraduate students and active researchers, organize international AI events and publish in prominent scientific forums. Their aim is to foster AI research and transfer that research to industry.

Recent Momentum

To give you an example of EETN's momentum, the AI-related conferences that our members have organized in Greece include the European Conference on Artificial Intelligence (ECAI 08), the European Chapter of the Association for Computational Linguistics (EACL 09), User Modeling (UM 07), the IEEE International Conference on Tools with Artificial Intelligence (ICTAI 07), the IFIP Conference on Artificial Intelligence Applications and Innovations (AIAI 07 and AIAI 09), and the International Conference on Automated Planning and Scheduling (ICAPS 09), together with many independent workshops and meetings. The biennial EETN conference (known as SETN) is being held for the fifth time this year. This well-respected conference has international participation and an acceptance rate of 30 to 35 percent, and Springer is publishing its proceedings in a Lecture Notes in AI volume. We've managed to have a decent number of submissions from Greek sites accepted for SETN 08. This shows an energetic scientific community, whose members strive for excellence.

Beyond the biennial SETN, we're fostering cooperation between Greek AI laboratories and industrial sites. We've established a network of research sites in both academia and industry to encourage people to start thinking of possible cooperative ventures. To emphasize this networking activity, we've given it the distinct name δ-EETN (the delta comes from the Greek word for "network"). We have a long way to go to succeed in this, but we must pave the way. Making industrial sites aware of the opportunities ahead is also a major factor for success, but to convince them, we must tell our success stories and show our excitement and strength in developing new AI technologies and putting them into real practice.

Obstacles Ahead

On the other hand, AI faces an important and difficult problem involving the integration and interaction of its subdisciplines. Small pieces of AI, sometimes hidden or

1541-1672/09/$25.00 © 2009 IEEE
Published by the IEEE Computer Society

Authorized licensed use limited to: IEEE Xplore. Downloaded on February 3, 2009 at 04:46 from IEEE Xplore. Restrictions apply.

The Hellenic AI Society

The Hellenic AI Society, or EETN, is a member society of the European Coordinating Committee for Artificial Intelligence, or ECCAI. As other societies do, EETN aims to promote AI R&D activities in Greece. It's a well-respected, vibrant community of people that strives for excellence, with many achievements to show for their work. Aiming to pave the way toward collaboration, EETN organizes a biennial conference, has recently established a growing R&D network of activities, called δ-EETN, and has conducted surveys to expose its strengths and weaknesses. Many more tasks are yet to be done, but two important ones come to mind: consistent financing of AI-related research, and the dissemination of well-recognized contributions and success stories.

even disowned, are being integrated into specific products. Placing a little intelligence in one product might be valuable, but advancing the awareness of and integrating intelligent methods in multiple AI disciplines would advance solutions in many domains, further boosting technology.

A recent survey showed that Greece's AI community is developing a wide range of applications in such fields as entertainment, business, commerce, finance, e-government, health and biomedicine, education, engineering, industry, telecommunications, the Web, and pervasive systems. However, we also learned from this survey that Greek industry isn't significantly involved in developing or exploiting AI applications. As a result, many attempts to build intelligent systems stop at the production of prototypes rather than making them into commercial products. National funding bodies, such as the General Secretariat of Research and Technology, should enforce funding of mixed academic-industrial projects that support the development of AI applications and their penetration in Greek society, industry, and business.

Figure 1. Robotics projects in Greece. (a) A robotic wheelchair, a sensor-rich robotic platform, and a robot that can operate indoors as well as outdoors, all from the Institute of Computer Science of the Foundation for Research and Technology-Hellas. (b) Photos of the Technical University of Crete's Kouretes Team, which won several awards at RoboCup 2008. These images show a small sample of the robotics community's activities.

Survey Results by Research Area

To foster awareness, we recently conducted additional surveys on activities concerning important and core areas of AI research in Greece. These reports are available on the EETN Web site (www.eetn.gr/english/artificial_intelligence_main.html). We hope that other well-known R&D activities in Greece will add to this list of topics, thus

Authorized licensed use limited to: IEEE Xplore. Downloaded on February 3, 2009 at 04:46 from IEEE Xplore. Restrictions apply.

fostering cooperation, driving integration activities, attracting interest from industry, and further driving funding activities. These new surveys let us evaluate the state of AI in each research area.

Greek researchers have made major contributions to search and constraint problem solving, although this area has not attracted as many people as other areas. However, there is a body of Greek scientists working in areas such as operations research and theoretical computer science that are relevant to search and constraints (specifically combinatorial optimization), but these have been developed outside the AI community and are not covered in the survey.

Machine learning has also attracted recent attention. EETN's related survey on this topic has much to say about the large effort devoted to this discipline and the exciting results it brings.

The survey on knowledge representation and reasoning offers a glimpse of our Greek colleagues' work in this area, revealing a young and thriving research community.

Given the long tradition of Greece in humanistic studies and related topics, as well as the need to develop applications that support the Greek language in the multilingual European Union, it's not surprising that research on natural language processing has attracted significant attention. The survey of EETN members' activities in this area demonstrates the exciting and important activities of the 10 sites it describes.

There is wide interest in engineering applications for autonomous communicative components, for representing complex and dynamic real-world environments, and for developing new technologies related to the abilities of intelligent, autonomous entities. Members of the Greek research community are quite active in the area of agents and multiagent systems, with important results for that community. Although this is evidenced by the survey in this area, much more remains to be done, as this will be an important and exciting topic, requiring new discoveries and collaborative activities.

Our Greek colleagues have also reported important results on Web and data mining, data integration, information filtering, and the semantic Web. These bring to the forefront a remarkably active and successful group of researchers.

During this stimulating time for AI in Greece, we intend to strengthen our efforts and remain in constant contact with colleagues, industry, and society.

George A. Vouros is a professor and dean of the School of Sciences at the University of the Aegean. He's also director of the MSc program in information and communication technologies and president of the Hellenic Society of Artificial Intelligence. Contact him at georgev@aegean.gr.

ADVERTISING INFORMATION
JANUARY/FEBRUARY 2009 • *IEEE INTELLIGENT SYSTEMS*

Advertising Personnel
Marion Delaney
IEEE Media, Advertising Dir.
Phone: +1 415 863 4717
Email: md.ieeemedia@ieee.org

Marian Anderson
Sr. Advertising Coordinator
Phone: +1 714 821 8380
Fax: +1 714 821 4010
Email: manderson@computer.org

Sandy Brown
Sr. Business Development Mgr.
Phone: +1 714 821 8380
Fax: +1 714 821 4010
Email: sb.ieeemedia@ieee.org

Advertising Sales Representatives

Recruitment:

Mid Atlantic
Lisa Rinaldo
Phone: +1 732 772 0160
Fax: +1 732 772 0164
Email: lr.ieeemedia@ieee.org

New England
John Restchack
Phone: +1 212 419 7578
Fax: +1 212 419 7589
Email: j.restchack@ieee.org

Southeast
Thomas M. Flynn
Phone: +1 770 645 2944
Fax: +1 770 993 4423
Email: flynntom@mindspring.com

Midwest/Southwest
Darcy Giovingo
Phone: +1 847 498-4520
Fax: +1 847 498-5911
Email: dg.ieeemedia@ieee.org

Northwest/Southern CA
Tim Matteson
Phone: +1 310 836 4064
Fax: +1 310 836 4067
Email: tm.ieeemedia@ieee.org

Japan
Tim Matteson
Phone: +1 310 836 4064
Fax: +1 310 836 4067
Email: tm.ieeemedia@ieee.org

Europe
Hilary Turnbull
Phone: +44 1875 825700
Fax: +44 1875 825701
Email: impress@impressmedia.com

Product:

US East
Joseph M. Donnelly
Phone: +1 732 526 7119
Email: jmd.ieeemedia@ieee.org

US Central
Darcy Giovingo
Phone: +1 847 498-4520
Fax: +1 847 498-5911
Email: dg.ieeemedia@ieee.org

US West
Lynne Stickrod
Phone: +1 415 503 3936
Fax: +1 415 503 3937
Email: ls.ieeemedia@ieee.org

Europe
Sven Anacker
Phone: +49 202 27169 11
Fax: +49 202 27169 20
Email: sanacker@intermediapartners.de

Authorized licensed use limited to: IEEE Xplore. Downloaded on February 3, 2009 at 04:46 from IEEE Xplore. Restrictions apply.