What can Synthetic Biology offer to Artificial Intelligence? Perspectives in the Bio-Chem-ICT and other scenarios

6 September 2013 - Taormina, Italy

Satellite Meeting at ECAL 2013 **(2-6 September 2013)**

Organized by

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Coordination of Biological and Chemical IT Research Activities

Call for Abstracts

Traditionally Artificial Intelligence (AI) research, broadly conceived as the study of intelligence through the construction of artificial models of natural cognitive systems, has been developed in the context of computer science and robotics. Today the scientific and technical advancements of biological sciences, leading to the emergence of Synthetic Biology (SB) conceived as the chemical synthesis of biological parts/systems/processes, allow the scientific community to extend AI research within the field of experimental biology.

The workshop aims at offering an interdisciplinary forum in which nascent programs involving cooperation between SB and AI in the exploration of biological and cognitive processes can be discussed in their groundings, their procedures, their possibilities and their limits, as well as enriched through scientific exchange of ideas.

The main focus will be on current and possible applications in AI research of the emerging bio-chemical based Information and Communication Technologies (ICT), founded on the convergence of biological, chemical, physical approaches, often in combination with progresses in miniaturization like micro-fluidic devices and Micro Electro-Mechanical Systems (MEMS). But the workshop is interested also in introducing and discussing other actual and possible approaches and research programs which involve SB in AI research.

Most of the participants will have a SB, AI, and/or bio-chem-ICT background, or come from scientific disciplines dealing with theoretical, epistemological and/or experimental issues related to the synthetic study of life and cognition. Our goal is to stimulate the interaction between applied research and theoretical / epistemological reflections, and to promote a front line in SB and AI that focuses on (some of) these questions:

- Can intelligence be studied through the construction and exploration of synthetic biological systems and processes? In which conditions? More specifically: What SB, and in particular its bio-chem-ICT tools and issues, can offer to AI?
- Which are the groundings, procedures, possibilities, limits, expected results, and impacts of current and possible research programs involving SB in AI research? How AI will advance by encompassing SB and bio-chem-ICT approaches?
- Can we nowadays plan concrete collaborations between computer science, robotics and SB in the scientific study natural forms of intelligence? How?
- Are the emerging directions of research in AI (such as embodied AI, enactive AI, soft robotics, …) good candidate to cooperate with SB in the exploration of natural forms of cognition? Can SB contribute to the development of artificial forms of cognition (artificial cognitive systems which do not model natural cognitive systems)?
- ...

The workshop intends to bring together researchers interested in investigating one or more of these aspects of the (possible/actual) relationships between SB and AI. The aim is developing an interdisciplinary dialogue able to promote the reflected involvement of SB in AI, and to create an interdisciplinary community concretely developing research programs based on the cooperation of SB and AI, and all related domains and lines of research.

If you would like to participate, please submit an abstract as a single PDF file (min 1000, max 2000 words) by sending the file as e-mail attachment to pasquale.stano@uniroma3.it.

Reception of abstracts will be confirmed by an e-mail message.

Deadline for sending the Abstract: **August 15 2013**

Extension of the deadline could be possible.

The best abstracts will be selected by the program committee, composed by the organizers and other additional members (currently under recruitment).

We will try to accept the maximal number of abstracts and organize the workshop in order to favor a wide participation, within the constraint, however, of the time slot originally programmed (half-day). Program details and other practical issues will be defined as soon as we shape the final list of speakers.

Authors will be notified for abstract acceptance August 31 2013.

Depending on the participation and reach of a critical mass, after the workshop we plan to collect selected papers to be submitted for a journal publication.

Registration

Early registration: June 15, 2013

Late registration: June 16 - September 6, 2013

On-Site registration: September 2-6, 2013

The Workshop Registration fees will be the same of ECAL 2011 (http://www.ecal11.org/registration/):

Workshops-only rates	
Student, Early	Euro 105
Student, Standard/Late	Euro 135
Academic, Early	Euro 145
Academic, Standard/Late	Euro 195
Individual, Early	Euro 225
Individual, Standard/Late	Euro 315

Student

Student fees are reserved for full-time undergraduate and graduate (Master's, Doctorate) students enrolled in accredited educational institutions. To belong to this category, you must be actively pursuing an undergraduate or graduate academic degree, with or without scholarship. (Postdocs, staff scientists and research engineers are not students).

Academic

Academic fees are reserved for post-doctoral researchers, university faculty (academic staff), researchers (research scientists, staff scientists), research engineers or technicians (with or without doctoral degree) and any other personnel (administrative, support) employed by an accredited academic institution who are not currently pursuing an undergraduate or graduate academic degree.

Individual

Individual fees apply to any other category of attendees: industry and business professionals, researchers, engineers and other employees of companies or non-academic organizations, unaffiliated individuals, etc.

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