Future and Emerging Technologies

Proactive Initiative 2004

Bio-inspired Intelligent Information Systems (Bio-i^3) - draft text - !!! NEW !!!

'**Reverse engineering' of the brain** could overcome the present obstacles to truly intelligent information systems. This initiative aims at decoding brain processes and applying the knowledge for new information technologies. It reinforces and complements previous FET initiatives in neuro-IT.

The objective is to explore new avenues in the design of intelligent information systems that attribute meaning to complex patterns of sensory stimuli and generate sequences of elementary actions that satisfy high-level goals. The systems should show autonomous growth in perceptual, motor and cognitive abilities, and their performance must be assessed in realistic scenarios.

The ultimate aim is to build systems that exhibit flexible, autonomous, goal-directed behav-iour in response to changes in internal and external conditions.

The design and construction of novel intelligent information systems will focus on:

1. multidisciplinary characterisation of computational properties, structure and other physical constraints of large assemblies of interconnected neurones that process information in the perceptual, motor or cognitive domains and serve as a model for new IT architectures and design;
2. mechanisms of evolution, development and plasticity that support self-construction, and self-repair of artificial or hybrid (biological/artificial) intelligent information processing systems; including exploration of hardware and materials suitable for interfacing to the nervous system, or for implementing sensors, processors and actuators in modifiable, adaptive, growing systems;
3. integrated control architectures that generate and exploit world- and/or self-awareness.
   The research should be carried out by inter-disciplinary teams that integrate engineering, neu-rosciences and other relevant disciplines. Proposals should have ambitious objectives and aim at breakthroughs that go well beyond the state of the art and address one or several of the foci described above.

Examples of possible research under this initiative are given in the background document : download as pdf file.
They should be considered as guidance and not as an exhaustive description of the research work called in this initiative.

Timetable (tentative)

- Call for proposals opened: 22 May 2004
- FET Infoday in Brussels: 3-4 June 2004
- Deadline for preproposals: 1 July 2004
- Deadline for proposals: 22 September 2004, 17h00 (Brussels time)
- Start of projects: Early 2005

Types of projects called

- Integrated projects
- Networks of excellence - background info on Network of Excellence in Fet Proactive Initiatives

General description of Integrated projects and Networks of Excellence see http://europa.eu.int/comm/research/fp6/instruments_en.html

How to participate

Next Call
Proposals can be submitted electronically.
Submission guidelines and forms will be made available here on this webpage as soon as the Call is launched - May 2004

Have a look also at ideas submitted to this initiative

FET NEURO-IT initiatives: Foundational research on information processing in biology in order to discover new paradigms for information technology

Starting in FP5, FET has successively funded **3 neuro-IT initiatives** aiming at taking inspiration from the living, mainly neurosciences, in order to derive new paradigms and technologies for information processing. The Neuro-informatics for living artefacts (NI) is a joint initiative with the Quality of Life Programme. Its objective is to explore new synergies between neurosciences and information technologies in order to enable the construction of hardware/software "artefacts that live and grow" (ALG), i.e. artefacts that self-adapt and evolve beyond pure programming.
The Life-like perception systems (LPS) initiative focuses on perception-response systems that are inspired by the sophistication of solutions adopted by living systems. "Perception" refers to sensorial, cognitive and control aspects, covering vision, hearing or any other modalities in which a biological organism interacts with the environment. It also addresses the process through which sensor signals are integrated to form internal representations of the sensory world.
The Beyond robotics (BR) initiative addresses artificial intelligence in the context of embodiment and interaction with the real world.

Project currently funded:

- In NI/ALG and LPS, 22 projects resulted from two focused calls in 2000 and 2001, with an additional 5 projects arising from the open call. Total funding for these projects is above 40 M€.
- The Neuro-IT (www.neuro-it.net) and EURON (www.euron.org) Networks of Excellence provides a platform for co-operation among NI, LPS, BR and associated projects.
- In BR, three integrated projects and a network of excellence are starting in January – May 2004. Total funding for these projects is ca. 20 M€.

Mailing list

To stay informed about the activities of this initiative, and be notified of conferences and future events, please submit your contact details through http://www.cordis.lu/ist/fet/maillist.htm

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Neuro-IT is the collection of bio-inspired FET proactive initiatives funded by the In-formation Society Technologies (IST) Programme of the EU, running as targeted and integrated research programmes, each consisting of a set of autonomous but complementary proj-ects that form as much as possible a co-herent whole.

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