Artificial Language Evolution on Autonomous Robots

Fact Sheet

Project Information

Funded under
FP7-ICT

Overall budget
€ 5 079 740

EU contribution
€ 3 399 223

ALEAR

Grant agreement ID: 214856

Closed project

Start date
1 February 2008

End date
31 January 2011

Coordinated by
HUMBOLDT-UNIVERSITAET ZU BERLIN

Germany

Project description

Cognitive Systems, Interaction, Robotics
Whole system approach modelling, from robotic embodiment and sensori-motor processing to conceptualization and language

This tightly integrated focused project aims at fundamental breakthroughs in understanding and synthesising the mechanisms achieving cognition and language. It engages in carefully controlled experiments in which autonomous humanoid robots self-organise rich conceptual frameworks and communication systems with similar features as those found in human languages. Language and cognition are seen as complex adaptive systems that are continuously shaped by the actions of their users.
The project takes a 'whole systems' approach and tackles the complete chain from embodiment and sensori-motor action to conceptualisation and language. Concept formation and language invention and acquisition are embedded in situated interactions. The inventory of concepts, the strategies for grounding them in the world, and action co-evolve with the emergent artificial languages. Next to the required physical and cognitive capacities of each robotic agent, we also focus on the complex systems phenomena that appear when a group of such agents starts to interact in a distributed fashion.

The machinery required for these experiments will heavily push the state-of-the-art in all relevant technologies, particularly robotics, concept formation, computational linguistics, and A.I. We need rich sensors, actuators and robust, real-time performance of vision and motor control subsystems. We need sophisticated constraint-based conceptualisation of the world and effective parsing and production systems. Above all we need to discover how these systems can build up their competence autonomously and remain adaptive to cope with changing environments.

The project’s orientation towards robotic experimentation is complemented by a search for an encompassing framework in which we seek to identify the principles underlying the evolution of human language-like cognition and to investigate in how far these principles are relevant to understand the most magnificent achievement of our own minds: language.

Fields of science

Programme(s)

Topic(s)

Call for proposal

FP7-ICT-2007-1

Funding Scheme
Coordinator Contact

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Coordinator

**HUMBOLDT-UNIVERSITAET ZU BERLIN**

- **Address**: Unter Den Linden 6, 10117 Berlin, Germany
- **Activity type**: Higher or Secondary Education Establishments
- **EU contribution**: € 1 058 440

Website [Contact the organisation](#)

Administrative Contact

**Ulrich Winderl (Mr)**

Participants (5)

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- **Belgium**
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- **Activity type**: Higher or Secondary Education Establishments

Website [Contact the organisation](#)

Administrative Contact

**Martina Follet (Mrs.)**

**UNIVERSITAET Osnabrueck**

- **Germany**
- **EU contribution**: € 387 900
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- **Activity type**: Higher or Secondary Education Establishments

Website [Contact the organisation](#)
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<tr>
<th>University/Academic Institution</th>
<th>Country</th>
<th>EU Contribution</th>
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<tbody>
<tr>
<td>UNIVERSIDAD AUTONOMA DE BARCELONA</td>
<td>Spain</td>
<td>€ 436,050</td>
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<tr>
<td>SONY FRANCE S.A.</td>
<td>France</td>
<td>€ 830,841</td>
<td>20 Rue Morel 92110 Clichy</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
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<td>UNIVERSITATEA ALEXANDRU IOAN CUZA DIN IASI</td>
<td>Romania</td>
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