Composing Learning for Artificial Cognitive Systems

Fact Sheet

Project Information

**ComPLACS**

Grant agreement ID: 270327

UCL website [](#)

**Status**
Closed project

**Funded under**
FP7-ICT

**Overall budget**
€ 5 853 582

**EU contribution**
€ 4 427 284

**Coordinated by**
University College London

United Kingdom

**Start date**
1 March 2011

**End date**
28 February 2015

Project description

Cognitive Systems and Robotics

One of the aspirations of **machine learning** is to develop intelligent systems that can address a wide variety of **control problems** of many different types. Currently, the technology used to specify, solve and analyse one control problem typically cannot be reused on a different problem. The purpose of **ComPLACS** is to develop a **unified toolkit** that will incorporate the most successful approaches to control problems within a single framework, including **bandit problems**, **Markov Decision Processes (MDPs)**, and **Partially Observable MDPs (POMDPs)**,
continuous stochastic control, and multi-agent systems. The toolkit will also provide a generic interface to specifying problems and analysing performance, by mapping intuitive, human-understandable goals into machine-understandable objectives, and by mapping algorithm performance and get back into human-understandable terms.

One of the aspirations of machine learning is to develop intelligent systems that can address a wide variety of control problems of many different types. However, although the community has developed successful technologies for many individual problems, these technologies have not previously been integrated into a unified framework. As a result, the technology used to specify, solve and analyse one control problem typically cannot be reused on a different problem. The community has fragmented into a diverse set of specialists with particular solutions to particular problems. The purpose of this project is to develop a unified toolkit for intelligent control in many different problem areas. This toolkit will incorporate many of the most successful approaches to a variety of important control problems within a single framework, including bandit problems, Markov Decision Processes (MDPs), Partially Observable MDPs (POMDPs), continuous stochastic control, and multi-agent systems. In addition, the toolkit will provide methods for the automatic construction of representations and capabilities, which can then be applied to any of these problem types. Finally, the toolkit will provide a generic interface to specifying problems and analysing performance, by mapping intuitive, human-understandable goals into machine-understandable objectives, and by mapping algorithm performance and regret back into human-understandable terms.

Programme(s)

Topic(s)

Call for proposal

FP7-ICT-2009-6

Funding Scheme

CP - Collaborative project (generic)

Coordinator
<table>
<thead>
<tr>
<th>University College London</th>
<th>Activity type</th>
<th>EU contribution</th>
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<tbody>
<tr>
<td>Gower Street</td>
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<td>Greta Borg-Carbott (Ms.)</td>
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### Participants (8)

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<th>MONTANUNIVERSITAET LEOBEN</th>
<th>Austria</th>
<th>Activity type</th>
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<td>Franz Josef Strasse 18</td>
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<td>€ 535 705</td>
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<td>Website</td>
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<th>MAX-PLANCK-GESELLSCHAFT ZUR FORDERUNG DER WISSENSCHAFTEN EV</th>
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