Dynamic Interactive Perception-action LEarning in Cognitive Systems

Fact Sheet

Project Information

DIPLECS

Grant agreement ID: 215078

Funded under
FP7-ICT

Overall budget
€ 3 496 111

EU contribution
€ 2 600 000

Coordinated by
LINKOPINGS UNIVERSITET
Sweden

Closed project

Start date 1 December 2007
End date 30 November 2010

Project description

Cognitive Systems, Interaction, Robotics
Flexible cognitive system architecture assisting car drivers for a safety ride

The DIPLECS project aims at designing an Artificial Cognitive System architecture that allows for learning and adapting hierarchical perception-action cycles in dynamic and interactive real-world scenarios. The architectural progress will be evaluated within the scenario of a driver assistance system that continuously improves its capabilities by observing the human driver, the car data, and the environment. The system is expected to emulate and predict the behaviour of the driver, to extract and analyse relevant information from the environment, and to predict the future state
of the car in relation to its context in the world. Starting from a rudimentary, pre-specified, i.e. man-modelled system, the architecture is expected to successively replace manually modelled knowledge with learned models, thus improving robustness and flexibility. Bootstrapping and learning is applied at all levels, in a dynamic and interactive context.

Dynamic and interactive context means that the system needs to react at any time to any relevant event and that the action comprises communication to the human driver or direct car control. The architecture applies a hierarchical design principle, where adjacent levels are connected by feedback-loops that require time for processing. Therefore, the potential reaction becomes more advanced through time, i.e. the system provides nested strategies. A real-time operation requires feed-forward mappings, which use the information learned in feedback operation.

The developed methods will be evaluated in three different settings: off-line with data recorded in a real vehicle, online in the real vehicle, and online for a model car. The first setting allows for evaluating methods that take into account the dynamics of the environment, but which are not real-time capable. The second setting allows for testing of passive assistance capabilities by communicating real-time information. The third setting allows for testing of active capabilities.

Programme(s)

Topic(s)

Call for proposal

FP7-ICT-2007-1

Funding Scheme

CP - Collaborative project (generic)

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Activity type
Higher or Secondary Education Establishments

EU contribution
€ 1 081 551

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Participants (5)

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ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT DES METHODES ET PROCESSUS INDUSTRIELS

France

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Research Organisations

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AUTOLIV DEVELOPMENT AB

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EU contribution

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Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)

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ECOLE NATIONALE SUPERIEURE DES MINES DE PARIS

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EU contribution
€ 0

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