Multimodal Immersive Motion Rehabilitation with Interactive Cognitive Systems

Fact Sheet

Project Information

MIMICS

Grant agreement ID: 215756

Project website

Status
Closed project

Funded under
FP7-ICT

Overall budget
€ 2 227 502

EU contribution
€ 1 600 000

Coordinated by
EIDGENOESSISCHE
TECHNISCHE HOCHSCHULE
ZUERICH

Switzerland

Start date
1 January 2008

End date
31 December 2010

Project description

Cognitive Systems, Interaction, Robotics
Multimodal Immersive Motion rehabilitation with Interactive Cognitive Systems

The main hypothesis of this project is that movement training for neurorehabilitation can be substantially improved through immersive and multimodal sensory feedback. The approach is real-time acquisition of behavioural and physiological data from patients and the use of this to adaptively and dynamically change the displays of an
immersive virtual reality system, with the goal of maximising patient motivation. This will result in complex systems that are natural, user-friendly and easy to use. In this project two exemplary systems will be developed for robot-assisted rehabilitation of upper and lower extremities. The systems will be able to record multi-sensory data (motion, forces, voice, muscle activity, heart rate, skin conductance etc.) and process this data in real-time to infer the intention of the patient and the overall psycho-physiological state. The computed information will be used to drive the therapy robots in combination with immersive virtual reality systems including 3D graphics and 3D sound. Several individually adjustable scenarios will be set up and the patient will be immersed into the corresponding virtual environments. Experimental tests on humans will evaluate to which such systems can increase the motivation of the patients and, thus, the therapeutic outcome of the training. New basic insights will be obtained about presence and motivation in humans. Furthermore, MIMICS technology will enter clinical routine so that large patient populations (e.g. stroke, spinal cord injury) can benefit. Motor rehabilitation will become more efficient and may reduce costs of the European health care systems. A multi-national network is required to better compensate regional differences and increase international acceptance. The MIMICS consortium is characterised by an ideal balance of engineers, computer scientists, physicians and one industrial partner, who are all word-leaders in their respective fields.

Field of science

/natural sciences/computer and information sciences/software/application software/virtual reality
/medical and health sciences/clinical medicine/physiotherapy

Programme(s)

Topic(s)

Call for proposal

FP7-ICT-2007-1

Funding Scheme

CP - Collaborative project (generic)

Coordinator
EIDGENOESSISCHE TECHNISCHE HOCHSCHULE ZUERICH

Address
Raemistrasse 101
8092 Zuerich
Switzerland

Activity type
Higher or Secondary Education Establishments

EU contribution
€ 451 800

Website
Contact the organisation

Administrative Contact
Robert Riener (Prof.)

Participants (6)

HOCOMA AG

Address
Industriestrasse 4
8604 Volketswil

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

EU contribution
€ 259 500

Contact the organisation

Administrative Contact
Gery Colombo (Dr.)

SCHON KLINIK BAD AIBLING SE & CO KG

Address
Seestrasse 5
83209 Prien

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

EU contribution
€ 227 500

Contact the organisation

Administrative Contact
Carla Naumann (MSc)
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<td>Spain</td>
<td>€ 87,437</td>
<td>Calle Jordi Girona 31 08034 Barcelona</td>
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<td><a href="#">Contact the organisation</a></td>
<td>Valenti Guasch (Mr.)</td>
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<td>€ 201,692</td>
<td>Gran Via De Les Corts Catalanes 585 08007 Barcelona</td>
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<td>Mel Slater (Prof.)</td>
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<td>Slovenia</td>
<td>€ 328,800</td>
<td>Kongresni Trg 12 1000 Ljubljana</td>
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<td>JANEZ NASTRAN (PROF.)</td>
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Address: Passeig Lluis Companys
08010 Barcelona

Activity type: Research Organisations

Contact the organisation

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