German Research Center for Artificial Intelligence GmbH

Active constraints technologies for ill-defined or volatile environment

Fig.1: The ACTIVE System in use

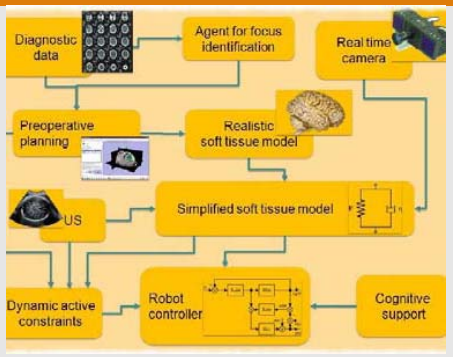

Fig.2: ACTIVE components

The ACTIVE project is concerned with the design and development of a multi-robotic system that operates on the brain.

The overall goal of the project is the development of a light and agile two-arm robot system that operates on the patient autonomously or in cooperation with the operation room personnel to accomplish complex and delicate operation steps. The Robotics Innovation Center will contribute to the development of AI-based methods for cognitive capabilities of the robotic system.

These include:
- Development of probabilistic methods and machine learning algorithms for evaluating sensory information in an operation room so as to react adequately to unexpected and dangerous situations during operation.

- Development of classification and data-mining algorithms for reliable recognition of target brain regions in the planned operations procedures.

Additional goals of the ACTIVE project are the development of a haptic interface for telemanipulation, a cooperative and user-friendly system control and a new type of operation table, where the movement of the head of the patient will be filtered and compensated by an active head frame designed on purpose (example, during spontaneously occurring seizures). In general, the ACTIVE project should contribute to the improvement of the quality and precision of the robotic surgery.

The project is run by a high-ranking European consortium with 14 partners from 7 countries.

Duration: 01/04/2011 – 30/03/2015

Partners:

Politecnico di Milano (IT) (Koordinator)
Consiglio Nazionale delle Ricerche (IT)
Imperial College of Science (UK)
Karlsruher Institut für Technologie (DE)
Fondazione Istituto Italiano di Technologia (IT)
Technion Israel Institute (IL)
Technische Universität München (DE)
DFKI GmbH (DE)
DDEP (IT)
TASMC (IL)
Force Dimension s.a.r.l. (CH)
Renishaw Ltd. (IR)
Medimaton (UK)
Consulting Finanziamenti Unione Europea srl (IT)
KUKA Roboter GmbH. (DE)

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