

Multi-sensor platform to improve communication and motor or cognitive rehabilitation of disabled people

DESCRIPTION OF THE TECHNOLOGY

The University of Alicante has developed a multi-sensor platform (with long-range sensor, 3D short-range sensor, eye tracking sensor and microphones) that improves communication and motor or cognitive rehabilitation of people with any type of disability. The system allows different types of therapies using multiple modes of interaction (concrete gestures of the body, arms, hands, fingers, by voice, by touch, gaze position, etc.) in people with different disabilities. Through a training process, the system can be customized to the specific needs of each disabled people, allowing the

definition of own gestures for each sensor. The system is integrated with a number of applications that allow the rehabilitation of patients through virtual reality applications and 3D interfaces (for example, make puzzles and mazes, or writing by predictive text). In addition, the system provides a flexible and modular environment to develop new applications for new therapies. It is looking for companies or entities interested in acquiring or adapting this technology for commercial use or exploitation.

MARKET APPLICATION SECTORS

This system can be used to perform **rehabilitation therapies in people with motor or cognitive disabilities**. In addition, this system **facilitates communication with others**, through a man-machine interaction more customized and natural (using different types of sensors, tablets, etc.).

Potential stakeholders:

- Companies for disabled support systems (development and trading).
- Associations and public or private entities aimed to provide support services for disabled people.
- Governments at the Social Welfare and Disability areas.

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- It enables an interaction and a more efficient implementation of rehabilitation therapies for motor and cognitive disabled people.
- It enables multiple modes of interaction (gestures, poses or hand movement, voice, eye tracking and touching) for people with different disabilities. It offers significant advantages over other systems.
- It enables customization of own patient gestures for each sensor, providing a natural interaction with the system.
- It provides biometric identification (facial recognition) of the patients, adapting the interaction of the system (sensors and gestures) depending on the user disability level.
- It combines the data obtained from the sensors with 3D interfaces efficiently. The system provides a more realistic way of rehabilitation through the use of advanced virtual reality techniques.
- It provides a flexible and modular environment to develop new applications oriented to new therapies based on the different needs of patients.
- It comprises sensors and devices available on the market. Therefore, it can be modified, adapted and replicated easily at low cost, depending on the type of patient, disabilities and therapies to implement.

CURRENT STATE OF DEVELOPMENT

The system has been developed and successfully tested at the **laboratory**, and in several **associations of disabled people**. Currently, there is a **prototype available for demonstration** (see Figure 1 and 2).

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INTELLECTUAL PROPERTY RIGHTS

This technology is protected by Spanish patent application:

- Title of the patent: "Sistema multisensor para rehabilitación e interacción de personas con discapacidad".
- Application number: P201531430.
- Application date: 5th October, 2015.

COLLABORATION SOUGHT

Companies or entities interested in acquiring or adapting this technology for commercial use or exploitation through:

- License agreement.
- Technical cooperation (application or adaptation of the system).
- Subcontracting agreement.

RELATED IMAGES



Image 1: Frontal view of the prototype.

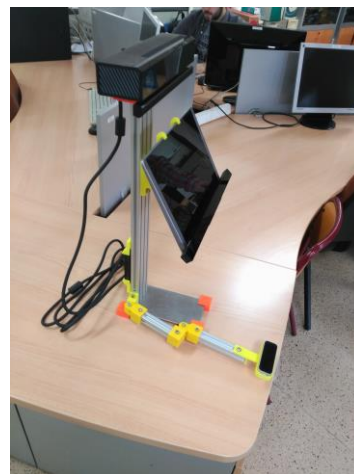


Image 2: Side view of the prototype.

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