

Thought-Controlled Robot Avatars

The challenges faced by society in caring for an older population are big but they are also driving innovation specifically in technologies, which can help older people live more independently.

Robert Oschler, a freelance computer programmer, is one such innovator. He has developed a mind-controlled robot for older people and those with disabilities. The robot has been designed to act like an ‘avatar’, which can ‘fill in’ for an individual in social or work contexts.

He has developed this using Robodance PC software. Oschler has been using something called the Emotiv EPOC EEG headset, a new interface for human computer interaction, to read facial movements, jaw clenches, and track eye movements. The software relays commands to the robot itself, which will in turn act in the appropriate manner.

The system can be trained to create usable triggers using 14 electrodes and the built-in gyro accelerometer on the Emotiv headset.

The real innovation in this product is the cost with the entire kit costing below \$600 compared to the five-figure amount for commercial robot avatars.

For more information please visit:

<http://www.robodance.com/robodance-5.php>

<http://www.kickstarter.com/projects/robots/robodance-5-telepresence-robotics-for-all-esp-the>

Robot legs for stroke patients

You may be familiar with the concept of robotic exoskeletons, which are being developed by various organisations and institutions, specifically to help individuals with disabilities. For example, Honda’s Support Assistant and Stride Management Assistant are based on Asimo technology and are designed to assist humans to walk. Other similar systems such as the Human Universal Load Carrier (HULC) designed by Berkeley Bionics of Californian have been designed for military purposes to help people carry heavy loads.

Recently scientists from the University of Twente in the Netherlands have developed a robotic exoskeleton called the lower-extremity powered ExoSkeleton (LOPES) to improve mobility for stroke patients or those who have spinal injuries, to enable them regain their mobility.

LOPES trains the body and mind of a patient to recover a more natural step, by providing supports for the legs and also recognising what the patient is doing wrong and applying corrections automatically.

A commercial version of this product is expected to become available for rehabilitation centres around the world as early as 2012.

For more information please visit:

<http://www.bbc.co.uk/news/health-14823404>

<http://www.bw.ctw.utwente.nl/research/projects/lopes.doc/index.html>

Mindo, a dose off alarm

In recent years ActiveAge has been tracking the development of many mind-controlled products, which are slowly beginning to enter the marketplace. One of the products we have been following is Mindo, which has recently been touted as a means of keeping drivers safe on the road.

Mindo is a portable, multi-channel brain-computer interface, which is a combination of computer-generated image technology and the wireless technology of the Nintendo Wii.

Mindo can connect to a mobile phone or computer via Bluetooth and translate the users thoughts into commands such as sending a text message or enabling the user to play video games by his/her thoughts.

One of the most interesting aspects of this product is that the brain wave detection system is capable of alarming motorists who dose off. When drivers fall asleep it will send out voice warnings through Android smart phones to wake them up.

Mindo has taken 7 years to develop and is the result of a collaborative project between five universities, from Taiwan, The USA and Germany. It is expected to be available commercially by the end of the year.

For more information visit:

<http://www.taipeitimes.com/News/taiwan/archives/2011/09/22/2003513897>

<http://motoring.asiaone.com/Motoring/News/Story/A1Story20110923-301034.html>

http://www.pac.nctu.edu.tw/Report/report_more.php?id=19995

A Washable intelligence t-shirt

Scientists at la Universidad Carlos III de Madrid have developed an intelligent washable t- shirt, which can monitor the vital signs of its wearer, locate him/her within the hospital and determine if the wearer is seated, sleeping or walking.

This new technology, which is currently a prototype, has been developed as part of a project called LOBIN: locating and biomonitoring by means of wireless networks in hospitals.

The system can track a patient's vital signs and position at all times and if any serious changes occur it will trigger an alarm and send a message to hospital staff. The alarm triggers can be customised based on a patient's need, so alarms don't sound unnecessarily all over the hospital.

The scientists are hopeful their product will be used in other areas too, such as the early diagnosis of cardiac anomalies in athletes, or monitoring patients in their homes, in order to reduce the time spent in hospital.

Although this is not new technology it could help to reduce the cost of unnecessary tests and examinations within the hospital or even reduce the number of staff required to deal with a particular patient.

For more information visit:

http://www.uc3m.es/portal/page/portal/actualidad_cientifica/noticias/intelligent_tshirts