

sci-tech.



DID YOU KNOW?

The anaesthetic qualities of nitrous oxide were first discovered by British chemist Humphry Davy in 1800. But initially, the medical uses of this so-called 'laughing gas' were limited, with it mainly being used for entertainment purposes. It was first used as an anaesthetic on September 30, 1846, by American dentist William Thomas Green Morton (pictured)

SPEC-TACULAR

Scientists have developed hi-tech spectacles that track eye movements; could help treat schizophrenia, vertigo, and also be used in gaming

MUMBAI MIRROR BUREAU

Sometimes, to diagnose illnesses such as schizophrenia and vertigo, or even reading and writing deficits, doctors need to take recourse to electro-oculography (EOG): A technique in which eye movements are measured using electrodes – similar to an electrocardiogram (ECG).

Now, Switzerland-based Andreas Bulling – a doctoral student at the Wearable Computing Lab of ETH Zurich – has developed spectacles that could make this technique portable.

Currently, the recording takes place in a doctor's surgery or in a clinic, using static apparatus, and usually needs to be assessed manually by the doctor.

Bulling's gadget – which might someday replace conventional EOG and could allow for additional applications, such as gaming – comprises special spectacles fitted with additional sensors that record the wearer's eye movements.

It involves using electrodes built into a spectacle frame to measure changes in electrical potential caused by eye movements.

These potential changes are transmitted via cables – also built into the spectacles – to a device about the size of a credit card, which can be worn on the arm or carried in the trouser pocket.

However, in contrast to a static EOG, the Eye Tracker can do this for a period of up to eight hours without

being connected to electricity mains. The data is also stored directly in the instrument.

Future plans for the spectacles include the ability to automatically recognise the environment in which a person is situated, and what activity he/she is carrying out.

"The development of the Eye Tracker firstly required designing the spectacles and the portable equipment to record the EOG

signals," Bulling explains. "The next step necessitated the development of software that can process and analyse these signals in real time."

He says the device must also be able to correct the signals at the same time, whenever necessary.

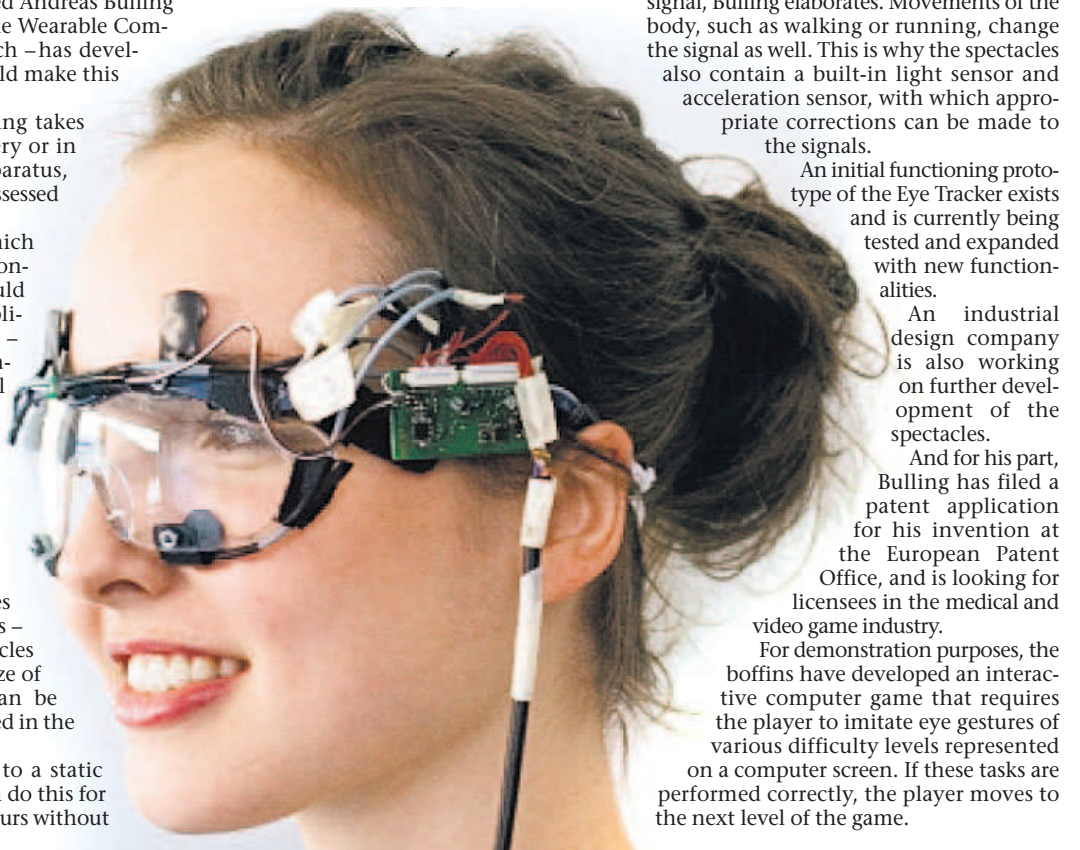
For example, ambient light changes the pupil diameter, which affects the EOG signal, Bulling elaborates. Movements of the body, such as walking or running, change the signal as well. This is why the spectacles also contain a built-in light sensor and acceleration sensor, with which appropriate corrections can be made to the signals.

An initial functioning prototype of the Eye Tracker exists and is currently being tested and expanded with new functionalities.

An industrial design company is also working on further development of the spectacles.

And for his part, Bulling has filed a patent application for his invention at the European Patent Office, and is looking for licensees in the medical and video game industry.

For demonstration purposes, the boffins have developed an interactive computer game that requires the player to imitate eye gestures of various difficulty levels represented on a computer screen. If these tasks are performed correctly, the player moves to the next level of the game.



Scientists develop McSleepy, a robotic anaesthetist

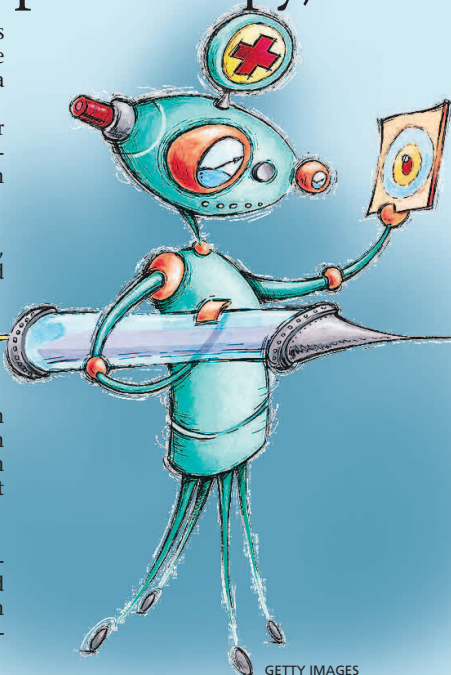
WASHINGTON: A team of Canadian researchers at McGill University have developed the world's first totally automated anaesthesia system, nicknamed 'McSleepy'.

The new system administers drugs for general anaesthesia and monitors their separate effects completely automatically, with no manual intervention.

"For the last five years, we have been working on systems where drugs are administered, their effects continuously monitored, and the doses adjusted accordingly," said Thomas M Hemmerling of McGill's Department of Anaesthesia and the Montreal General Hospital, who headed the research.

McSleepy helps the anaesthesiologist in the same way an automatic transmission helps people when driving, and allows them to focus more on other aspects of direct patient care.

"Think of it as a sort of humanoid anaesthesiologist that thinks like an anaesthesiologist, analyses biological information and constantly adapts its own behaviour, even recognising its own monitoring's malfunction," he added.



Researchers performed the technique on a patient who underwent a partial nephrectomy – a three and a half hour procedure that removes a kidney tumour while leaving the non-cancerous part of the kidney intact.

To manipulate the components of general anaesthesia, the automated system uses medical technology – developed by the research team – to measure three parameters, displayed on a new monitor: depth of hypnosis, pain levels, and muscle relaxation.

Then, the system administers the appropriate drugs using conventional infusion pumps, controlled by a laptop computer on which McSleepy is installed.

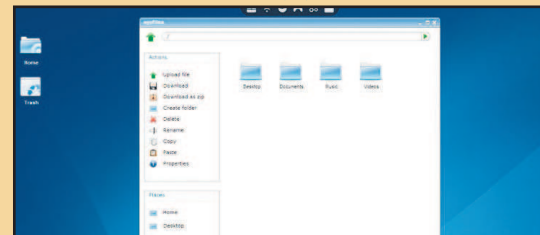
Using these three parameters and complex algorithms, the system calculates the appropriate drug doses – and it's faster and more precise than a human.

The system can also communicate with PDAs, making distant monitoring and anaesthetic control possible.

Besides that, this technology can be easily incorporated into modern medical teaching programs such as simulation centres.

"It will probably take two years to perfect the system," said Hemmerling. ANI

website



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Tired of lugging that heavy laptop around? Today's Web site lets you take your computing online, and access it from anywhere. Bloxtr is completely free, and offers a familiar Windows-like interface; complete with an office suite, games, and accessories. You can upload your files to store them; and once altered, you can either save them online or download them to any PC. A great resource for computing on-the-go.

Lego's latest brick trick: an online virtual world

BILLUND, DENMARK: Millions of children pick up Lego bricks each year, and spend hours – 5 billion, in fact – creating their own imaginary worlds. Now, the manufacturer of the little plastic playing blocks wants to take them online to 'Lego Universe', a virtual world for fans of the ubiquitous toy.

To launch next year as a Massively Multiplayer Online Game (MMOG), Lego Universe will let players create online versions of themselves and interact with each other.

"We want to make the connection between digital play and physical play," said Mark William Hansen, who is in charge of Lego Universe. "The physical experience is our core; the digital experience will never replace the physical experience, but it's a nice add-on."

Lego Universe will blend real-world style environments with characters and buildings made of digital plastic pieces. A forest would have less bricks in the background, while a city would lend itself to being made nearly entirely with bricks.



A screenshot of the upcoming 'Lego Universe'

Each player's avatar, or online persona, will be a customisable digital version of Lego mini-figures.

Lego Universe will initially launch as a PC game, available in stores or as a download, and may eventually be available on other gaming platforms. It will operate as a pay-as-you-go subscription service at a "competitive price," Hansen said.

Most social online worlds have their own currency or monetary system, and Lego Universe will also require users to spend virtual money to buy virtual bricks. But rather than winning or beating an opponent, players build capital by spending time in the game.

"The more a child plays, they collect more coins and more bricks. The more you play, the more you get to build things," Hansen said. "We want kids to come and play together."

About two dozen people at Lego are working on the game while an additional group of nearly 70 are working to create the online world in the US where game developer and Lego partner NetDevil is based.

Lego Universe, the company says, will allow users to create, destroy, enact battles, or just fiddle with bricks in a world of their own.

But there will also be a link back to the physical world. Just like with Lego Factory, users will also be able to order the physical versions of their online creations and have them delivered to their door. REUTERS