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NEURAL CONTROL - CYBORG - THE TRANSFORMATION

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Abstract- Neural control/interfacing/interaction is a powerful means, which can develop a robust bridge between humans and machines. In this paper we emphasize on neural interfacing as an evolving trend in wireless communications by taking into account one of its important application i.e. cyborgs. A cyborg is a cybernetic organism (i.e. an organism that is a self-regulating integration of artificial and natural systems). In the next half of the paper we discuss the operational features of cyborgs. In an attempt to promote greater interaction between humans and computers, companies that develop (cybernetic) robotics technologies participate in a variety of seductive strategies that embody the cyborg discourse. Some of these strategies persuade individuals to concede to particular philosophies, such as the argument that technical artifacts and instrumental reasoning are necessary for effective social development. With the experiments conducted and proposed to be conducted in future and in the process give a brief description of the advantages and disadvantages of this technology .
Keywords- Cyber implantation, Neural interfacing and Implantation.

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Introduction

Attachments and interfaces mediate our interaction with the environment and usually are positioned on the surface of the body. Physical objects would be called tools or attachments, while information utilities would be called interfaces. In the same way a neural interface allows human brain communicate directly with a computer, without any other equipment. That kind of interface allows any illusions to be inputted to human nervous system. Neural interfacing fantasies have mainly grown out of science \fiction.This human computer interface may now lead to a revolutionary organism called as “cyborg”, which was thought of as a science -fiction earlier.

What is Cyborg?

A cyborg is part human and part machine(robot), a hybrid of neurons and wires or circuits. It is a human being artificially transformed into a machine by providing a proper interface between man and computer and cyborg means “Cyber Organism”.

What is Neural Interfacing?

The Society for Neural interfacing (SNI) actively promotes research on innovative approaches dedicated to Neural Interfacing (NIF). Evaluating current technology and its intrinsic limitations it is possible to outline an almost perfect Neural Interfacing technology, however, predictions are largely based on current visions and one's imagination. Thus, the content of this site is expected to be up dated on a regular basis. NIF techniques with the potential of significantly improving current electrophysiological approaches should exhibit the following features:

- Non-invasive communication with the neural tissue
- No harming side effects
- Spatial resolution in the range of micro- or nanometers in order to specifically target individual neuritis.
- Temporal resolution at the millisecond level in order to capture neural processes
- Real-time data acquisition and processing.

Operational and Architectural Features of Cyborg

A silicon chip is implanted into any part of the body especially the region where most of the nerves are interconnected, and send and receive the electronic impulses. This silicon chip is designed in such a way that it can receive the nerve signals, amplify them and encode the signal into digital format by which proper computer accessibility is provided. Since no wires are preferred to interconnect the cyborg and computer a wireless communication path is preferred. This implant is encased in a glass tube. One contains the power supply, a copper coil energized by respect to the signals from the "Cyborg". Radio waves to produce an electric current. In the other end, three mini printed circuit boards will transmit and receive signals. The implant is connected to the body through a band that wraps around the nerve fibers and is linked by a very thin wire to the glass capsule. The chips in the implant will receive signals from the nerve fibers and send them to a computer instantaneously. For example, when a finger is moved, an electronic signal travels from the brain to activate the muscles and tendons that operate the hand. These Nerve impulses will still reach the finger. The signal from the implant will be analog, so it is to be converted into digital in order to store it in the computer. This technology would be implemented in almost all fields where humaninteraction is needed,but they should be provided with comput er aided cameras.

Case Study

Cyborg implantation on a deaf patient

A patient was losing his hearing at a rapid pace due to a genetic fault.

He was profoundly deaf and could barely use a phone and had a closed captioning device on his TV set.

Fig.1- Implant Receiver

Pictured above is the implant receiver, the Advanced Bionics the most advanced Digital Signal Processor (DSP) based processor available. The gold plated titanium part is the enclosure for the electronics. The clear part with gold wires running along the perimeter is the implant antenna with a small magnet in the center. The long sensor array tip is wound inside the cochlea of the inner ear. There are 16 sensors on the tip and most of them end up touching ever so slightly some of the nerves inside the damaged cochlea. A small channel is routed out from the surface of the skull just above and behind the ear to seat the processor and antenna. A hole is then drilled through the mastoid bone behind the ear to carefully insert and position the sensor array in the cochlea. Some extremely small metal guide tools are used by the surgeon to carefully insert the array without doing any damage to the fragile cochlea.

Cyber Spy

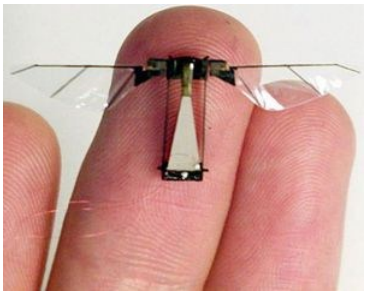

Fig. 2- Cyborg Insect

The Asia Times has a long piece on cyborg insects, which are being developed under the auspices of DARPA (the Defense Advanced Research Projects Agency). Cyborg insects are one path to tiny unmanned aerial vehicles (the other is fully artificial insects), a technology that the military–any military–would like to get its hands on very, very much.

Here's how it works: When the insect is in its pupal stage and thus still developing toward adulthood, small components are inserted into various parts of its body and brain. As it matures, it grows around the components and can then, to some extent, be controlled. They get the impression that the technology is still very much in its pupal stage. It also has the disadvantage of being, bar none, the most disgusting example of high tech ever encountered. So what? Governments can be relied upon to use this technology to the fullest extent of the law and, if necessary, to change the law as they see fit. But this is a secondary consideration. What really matters are civilian applications. This technology will one day get into the hands of the private sector where it will reshape society and drive significant cultural change. No matter where you were, you'd have to assume you were being watched by invisible insects and that videos of anything interesting would wind up on the web. You would be watched by jealous (ex-) spouses. suspicious landlords, curious teenagers, private investigators, nosy neighbors. In short, anyone with an interest and (say) $50 for the kit.

Cyber Nurse

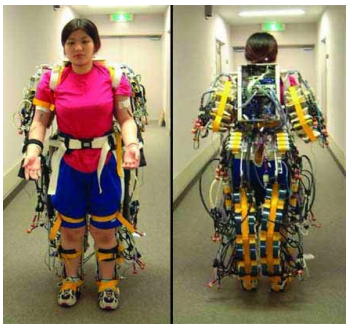

Fig. 3- Cyborg Nurse

Russian scientists design mechanical nurse and they are also working on designing a robotic surgeon, too! Also the need of the Robotic Physiotherapist' on its way, whose ultrasound behavior you can surely count on. And the Pentagon has already developed the robotic EMT known as Vecna BEAR Robot For Battlefield Extraction And Retrieval. Capitalist medicine is a science and not

an art, and a lab rat can get no better care than what is ahead for us.

Conclusion

Though bioelectronics has many advantages it may lead to negative arguments with the invention of biological machines called "Cyborgs". As many scientists have eloquently argued, once a technology is out there, you cannot make it go away. There never was a technology that the human race ever abandoned wholesale, even the hydrogen bomb or other weapons of mass destruction with the power to wipe out all life on Earth. When human beings are offered the chance to utilize computers and electronic technologies within their bodies to achieve the same results, it is almost certain they will embrace them regardless of the risks. Based on this, it would be unrealistic to try and ban such technologies, however one might worry about their ethical and social consequences. A ban would only probably force them into a large, criminal black market, as illegal drugs and weapons already have been.

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