THANKS FOR INTEL CHIPS, STEVE

Brain chips

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NOW I HACK YOUR BRAIN
Menu for the day

• What are brain chips?
• Why is it important?
• How does the technology work?
• What are the advantages?
• How far has work progressed?
• Drawbacks and problems
• What colour is the horizon?
• Question answer session
What are brain chip

Implantable computer chips that records brain signals and transmits them to muscles.

Brain chips can enhance memory of human beings, help paralyzed patients and are intended for military purposes.

Develop direct interface between brain and computers.
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Why is it important

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Every thing the brain does from adding a row
Of numbers to directing the arm to swat a fly
Creates a potential difference in the brain.
The information is transmitted from the cell
to the motor cortex by means of action potential only.

Now this potential difference ("action potential") is captured by our electrodes and is transmitted via fibre optic to the digitiser.
The digitiser converts the signal into some 0s and 1s and that is fed into the computer.

Thus we've successfully given a new path to the propagation of brain commands from the brain to the computer via braingate.

Now when some external device is connected to the computer they work according to the thought produced in the Motor cortex.
Brain gate technology

“NEURO MOTOR PROSTHESIS”

An investigational device comprised of internal and external sensors

The internal sensors detect the brain signal activity and external sensors digitize the signal to feed into the computer.
The arrangement of internal sensors

The internal sensors consists of a chip

Of size \((4 \times 4) \text{ mm} \times \text{ mm}\) with 100 Electrodes each of length 1\text{mm}
THE ARRAY BEING CONNECTED TO THE MOTOR Cortex IS ATTACHED BY OPTICAL FIBRES TO THE PEDESTAL ON THE TOP OF THE SKULL.

THIS IN TURN IS CONNECTED TO THE COMPUTER VIA A DIGITAL CONVERTER.

NOW THE COMPUTER IS CONNECTED TO VARIOUS EXTERNAL DEVICES LIKE T.V., INTERNET, WHEELCHAIR, EXTERNAL HAND, ETC.
In 1870 Hitzig and Fritsch stimulated various parts of dog's motor cortex. They observed that depending on what part of the cortex they stimulated, a different part of the body contracted. Moreover, they found that when they destroyed the same area of the cortex, the corresponding area of the body became paralyzed.
This is how it was discovered that every part of the body has a particular region of the primary motor cortex that controls its movement.

The area 6 of the motor cortex decides which set of muscle is to be contracted.

The area 4 activates those muscles through motor neurons by calling various other part of brain (such as cerebellum).
WHY TO CONNECT THE MOTOR CORTEX?

Physiology of implant
Challenges to progress

Interface between biology and technology.

Giving a paralyzed person complete control over robotic arms.

Decreasing the size of chip.
Advantages of brain chip

It will increase the dynamic ranging of senses and enabling. Brain cells enable users to see IR, UV and chemical spectra.

It will enhance memory.

It will enable “cyberthink”.

It will enable consistent and constant access to information where and when it is needed.

The advantage of implants is that they take the decision making power away from the addict. Chips take away one's free will. It enables a person to make a better choice not to take drugs at all.
Drawbacks

It cannot reliably predict all the effects.

Safety

Individual needs are not realized.

It may create social inequality.

Cyber crimes are easier.
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What colour is the horizon

Brain implants enhance capability of human organs and senses.

It has a significant role to play in future genetic engineering fields and neuroscience.

Let's hope this technology will be used for restoring peace of world and not giving the world a devastating end.

Future implications are mind blowing. We can have a robot completely controlled by the thoughts which can do any work and obviously very much effectively.
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Questions please

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Thanks to

- My friends for their great support and time.

Respected teachers for their confidence in us.

Internet for its generous resources