

# Brain Implants - Using advanced neurology to repair or enhance our brains

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## Abstracts

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### SUMMARY

Currently the aims of brain computer interfaces are twofold. The first is use our greater knowledge of the brain to create devices that can assist and repair brains that have received damage in some way. The second is to augment the ability of a brain to be able to do much more than it already can. Scientists have made great breakthroughs in neuroscience using implanted neurons in the brain to help repair vision, hearing and paralysis. The next step is to develop less invasive methods of achieving the same goals with an eye on producing implants that can enhance human ability to input and output information from the brain, to achieve things such as brain to brain communication and enhancing the brains ability through connecting it to computers. The proponents of this technology see it as a necessary development in order for humans to keep pace with technologies such as AI.

### KEY QUESTIONS ANSWERED

What is a neural lace and why do people want to create it?

What disabilities are able to be overcome with neural implants?

How are neural implants going to be useful in the future of the species?

### SCOPE

Learn how tech combined with neurology is creating some fascinating new abilities to fix and augment the brain.

Examine the companies that are researching in this area.

See the types of remarkable things that modern neurology can do and how swiftly it will change our world.

## **REASONS TO BUY**

In the last five years there have been some remarkable breakthroughs in medical implant technology that show that injuries and conditions which were previously thought to be unsolvable can now begin to be remedied. Whilst the technology is still relatively crude, it has established certain medical principles that will become common place, such as creating BCIs (brain computer interface).

Cochlear implants bypass the damaged part of the ear and use electrical stimulation to enable a deaf patient to hear again. Using a system of microphones and sound processors around the ear, these devices can bypass the damaged parts of the brain to deliver electrical stimulus to the nerves that transmit sound information to the brain.

Whilst much of the progress made in BCI technology so far has been from medical companies looking to solve a specific medical problem, the next wave of BCI market entrants are very different. A number of well-funded ventures have begun that aim to build on the steps taken in the medical arena to develop technologies for a completely different purpose. These companies are looking to draw on the technological skill of Silicon Valley to produce devices and implants that can connect a person with a computer for the aim of enhancing their capabilities.

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Assisting brains that need repair is a key aim of neural implants and BCIs

Cochlear implants are very common place, non-invasive and can restore senses

Deep brain stimulation alleviates the symptoms of Parkinson's disease

Retinal implant technology is allowing the blind to see again through a bionic eye

Treatment of spinal injuries to allow patients with paraplegia to move again

Microfibers are becoming more advanced and this is opening up new possibilities

The next step for BCIs is human enhancement

DARPA has been working in this field for a number of years for defense purposes

Kernel is looking to find ways to improve human intelligence and cure disease

Neuralink is planning to create an AI interface between the brain and computers

Even successful programs have shown that side effects can be severe

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