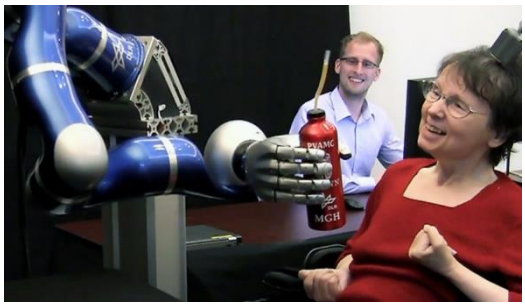
Potential of Neural Interfaces

Technology that can interact with the brain has huge medical potentials. Implants are helping to treat conditions such as Parkinson's disease, depression and epilepsy. The first steps have also been made on technology that will provide greater independence to people suffering from paralysis. This may be through controlling their own movement or that of a robot.

1. A patient with chronic paraplegia is able to walk thanks to precise electrical stimulation of their spinal cords via a wireless implant.

Image Source: EPFL/Jamani Caillet.



2. A paralysed patient uses the BrainGate system to make complex movements with a robotic arm through thought.

Image Source: Image taken from screenshot of video shared on YouTube.com by NIHNINDS

These technologies, that link into the central nervous system, offer potentially life changing possibilities. The possibilities of this technology in helping to overcome disease and disability are enormous.

But some companies, such as Elon Musk's Neuralink, have talked about ways to utilise the technology beyond healthcare. They hope to link the central nervous system directly with technology. Ideas that may not sit comfortably with everybody.

So where does the future lie for this technology?

What uses for the technology are acceptable to people?

Should neural interface technology be specifically limited to healthcare?

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Availability of Healthcare

The cost of medical treatment can range dramatically. Paracetamol can be purchased at a cost of a few pence while some special gene therapy treatments can cost upwards of a million pounds.

How the cost of these treatments are covered varies around the world. The UK has a national health system paid through taxation, albeit with a few subsidised patient costs such as prescriptions and dental care. This system places a large burden on the state but provides citizens with access to healthcare without fear of cost. The USA, meanwhile, has privatised healthcare which requires citizens to pay for any treatment they receive. To reduce costs, those who can obtain insurance cover. But even with insurance, people can still potentially find themselves in debt following an illness. Other countries have different systems.

In 1946 the World Health Organisation declared health a fundamental human right.

But do all healthcare systems provide people this right?

Can people keep healthy if they can't afford to pay for treatment when they fall ill?

Is there a perfect healthcare system? Is it possible?

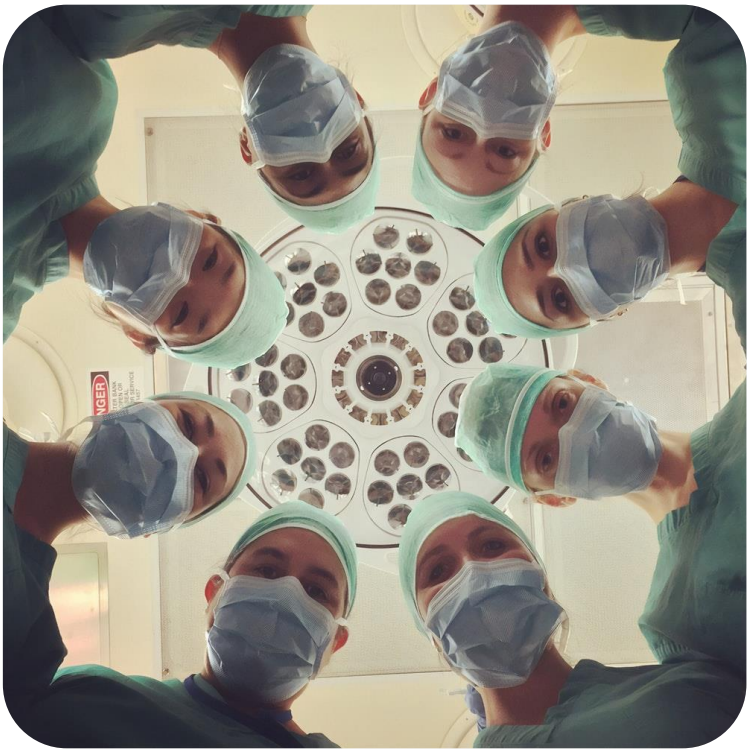

Photo by National Cancer Institute on Unsplash Healthcare Data

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The Rise of Data

Data is a hot topic at present with questions over the collection, storage and use of it in databases. For example, the internet has provided companies such as Google, Amazon and Facebook with vast swathes of information about us.

Healthcare systems also collect and store data. Through the analysis of this data, trends in public health can be identified that can help spot disease outbreaks or opportunities to redistribute budgets. However, big data also has the potential to be exploited in the wrong hands.

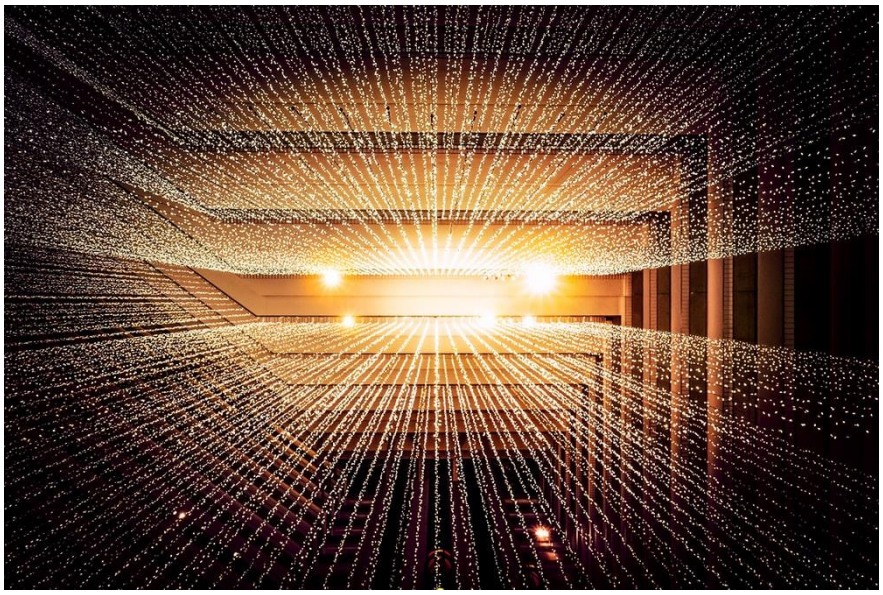

Photo by Joshua Sortino on Unsplash

Neural interfaces will collect a lot of information about the brain. If the data from numerous devices are collected together, then they could provide scientists with huge insights into how the brain works.

Should companies and institutions be allowed to group together and analyse data, even if anonymised?

Who should have ownership over data collected by implants?

What are the consequences if that data can be translated into thoughts, memories and feelings?