OPPORTUNITY #46
WHAT IF WE COULD SHARE OR OUTSOURCE OUR BRAINS?

PUTTING OUR HEADS TOGETHER

Using brain–computer interfaces to exchange information with machines and other people's brains

WHY IT MATTERS TODAY

Researchers in neurotechnology are making progress in understanding the brain and how to make it interact with machines and other minds using brain signals alone. This is aided by brain–computer interfaces that also can be applied to stimulate nerves and help those who face restrictions in movement or control.

The technology can benefit many groups, from amputees who could control prosthetic limbs to improve memory for people dealing with Alzheimer's disease, stroke or head injuries.[462] Not without challenges, these interfaces are also used in gaming.[463] Bi-directional brain–computer interfaces could enable us to speak to each other without having to say a word.[464]

The global market for brain–computer interfaces is expected to grow from around $1.5 billion in 2020 to around $5.5 billion by 2030.[465] The market in medical applications is expected to increase from $1.4 billion in 2021 to $2.4 billion by 2026, while use of BCIs in entertainment and gaming applications rises from around $100 million in 2021 to nearly $190 million by 2026.[466]

Artificial intelligence (AI)[467] is a critical enabler of neurotechnology and by 2030 it is expected to have a $16 billion impact on the global economy[468] with $320 million occurring in the Middle East.[469]

SECTORS

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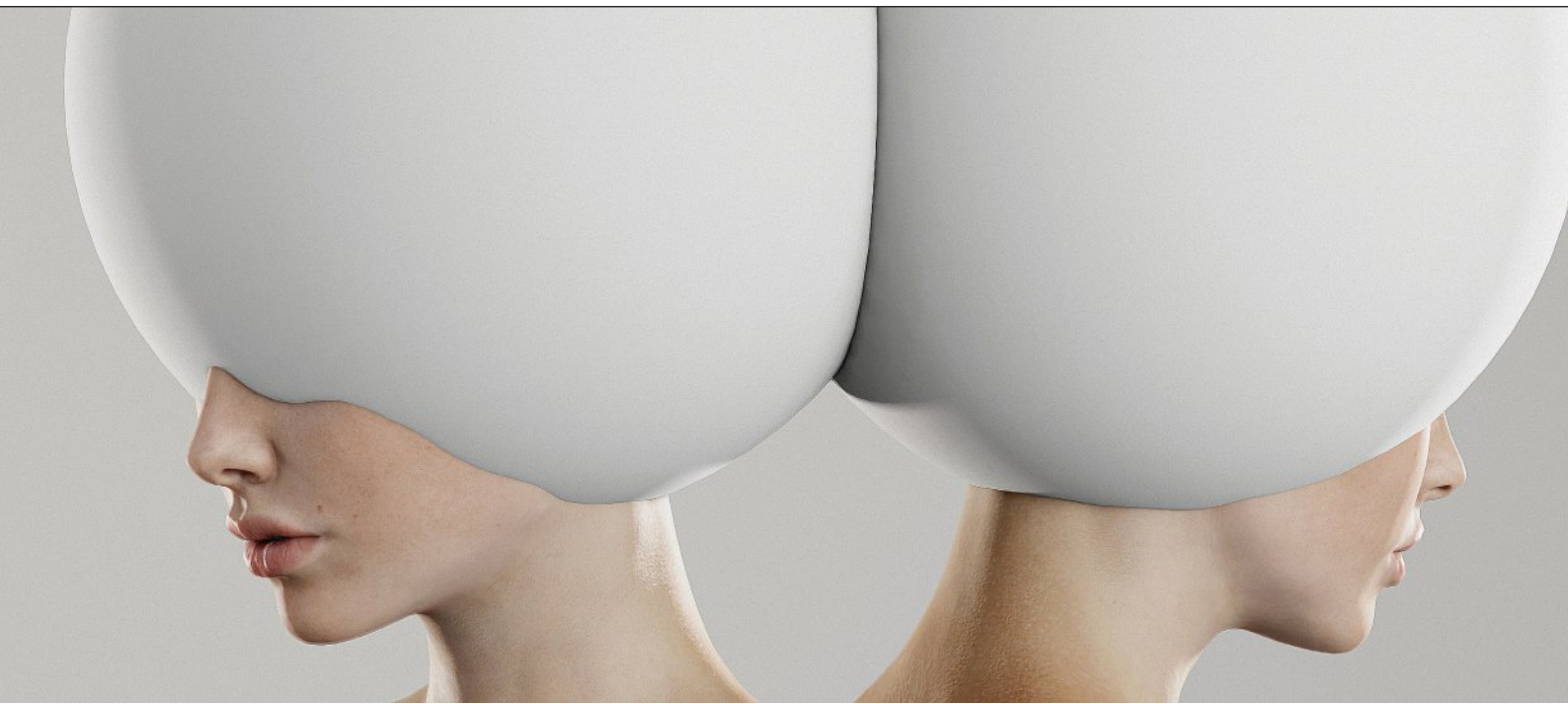
THE OPPORTUNITY TOMORROW

Brain–computer interface technology is in its infancy and there are multiple possibilities on the horizon, from moving devices and typing and communicating using thought to communicating with smart homes.

Advanced, non-invasive read-and-write connectivity between machines and brains can enable people to share information not only with machines but between themselves

Ultimate a 'brain cloud' can be created that contains the thoughts, knowledge and memories of millions. This offers unprecedented possibilities for communication, knowledge transfer, individual learning and the safekeeping of skills and knowledge for future generations.

The technology raises issues from safety to privacy and autonomy, making it important to draw up protective regulatory frameworks to ensure it is used ethically.

BENEFITS

Allowing people to explore other people's experiences and perceptions could improve empathy and social cohesion. A collective and connected intelligence might address and solve some of the most intractable challenges humanity faces. On a personal level, it can reduce pain and improve the quality of life for older patients and others who suffer from brain injury or disorders.[470]

RISKS

Risks include the potential for abuse or attacks to corrupt or plant false information, loss of control over personal memories and thought, or opting out becoming effectively impossible.