

The Extended Mind, Extended: Ethical or Not?

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Received: August 11, 2023; **Published:** August 30, 2023

DOI: 10.55162/MCET.05.159

Abstract

Electroencephalography, a technique for observing the electrical activity of the brain, is the approach that holds the most promise for achieving practical BCI applications. Before becoming widely used, EEG-based BCIs will need to make a lot of scientific advancements, but more crucially, they will cause a number of social, ethical, and legal issues. Researchers reviewed current commercial brain-computer interface devices and talked about the main technological constraints and ethical issues with them.

Keywords: augment; brain computer interfaces; ethics

Introduction

Understanding the Technology

BCI- what is it?

The term “Brain Computer Interface” refers to a technique that enables users to interact with computers exclusively through their brain activity, which is frequently measured using electroencephalography (EEG). Having total secrecy ensures that the person can become more autonomous.

BCI is a field that monitors the activity of the central nervous system, records brain signals, analyses and converts them into actions, measures and translates data into an output that can be fed to the computer to be used as an input signal. The methods used to track brain activity fall into two categories: invasive BCI and non-invasive BCI. EEG signals are used in non-invasive methods. Electrodes are attached to the scalp in order to capture brain activity.

What does it do?

One of the motives of the BCIs and augment intelligence technology is to help patients with motor nerve dysfunction. BCI technology is being employed for a variety of purposes, including the treatment of illnesses and injuries, gaming control, wheelchair control for the disabled, aiding in and enhancing learning, and military applications.

What the conflict is about?

Since brain data is seen as the most private and sensitive information that might be connected with any individual user, this is very concerning. This is mostly due to the fact that, in addition to having diagnostic value, EEG data can also be used to infer emotional and cognitive states, giving researchers unmatched insight into the intents, preferences, and feelings of users.

The possibility for BCI to be widely used, poses intriguing problems concerning moral and legal accountability, such as whether or not we have more control over our thoughts than our body or if getting a BCI renders the user legally and morally liable for all of the device's output. In essence, the debate is whether the distinctive properties of BCI will call for modifications to our legal and moral frameworks.

Can BCI really decode our thoughts?

Through the use of neuroimaging methods like functional magnetic resonance imaging (fMRI) and functional near-infrared spectroscopy (fNIRS), brain-computer interfaces provide ways to access AAC (Augmentative and Alternative Communication) systems by detecting cerebral activity via electroencephalography (EEG), event-related potentials (ERPs), and more recently. Another emerging technique is based on a neuroprosthesis that can directly interpret fictitious speech from neural signals in the brain regions responsible for speech creation. This concept offers hope for a system that enables more lifelike interaction on the quicker timeframe of human conversation. Those who have never spoken from birth or whose speech-production difficulties go beyond motor disability may not be good candidates for this sort of neuroprosthesis. BCI can be medically used for several impaired patients, especially those with diseases causing paralysis and restricted movement of bones and muscles. Diseases such as Parkinson's can be treated to some extent using BCI technologies such as deep-brain stimulation. It's ability to enhance augment intelligence and restricted movement can prove to improve standard of living to a greater extent.

Superficial Powers- can they be bounded?

BCIs are a revolutionary technology that improves, extends, augments, and restores human intelligence. It is a significant method for enhancing intellect. Augmenting human intelligence and cognitive abilities is envisioned as a helpful tool, not as a substitute. Some researchers believe that autonomy, that is a person's ability to freedom of choice, may suffer if a BCI device plays a causal role in the person's decision-making. In a similar vein, the device may function too effectively: perhaps our typical brain to muscle to action chain has some built-in censoring properties, whereas BCI takes signal input directly from the brain and may lead to inappropriate actions that would typically be considered but not actually carried out. It's conceivable for BCI users to mistakenly believe they are acting as agents, which is known as the illusion of agency.

Communication neuro-technology has the potential to improve testimonial capacities, agency, and social engagement, but it also carries a danger of either doing harm to its users or making them liable for doing harm to others. The responsibility for communication-related civil and criminal legal wrongs, such as defamation, threats and harassment, the dissemination of hate speech, the dissemination of child pornography, the divulging of state secrets, or the inciting of terrorism, is also included. When should a user be liable for such a communication if a neuro-technology acts as an intermediary, and what safeguards should be put in place to prevent harm to the users' own interests?

People occasionally assert that the existence of unlawful content is the result of virus or malevolent hacking. This draws attention to the problem of cybersecurity while using communication neuro-technologies, especially when they are networked. Communication neuro-technologies may be exploited maliciously by outside parties, which complicates assigning blame but also poses a unique risk to users whose control over their devices may be compromised and whose personal data may be obtained and utilised by outsiders. The recognition of speech would enable quick message construction and search engine input, among other things, therefore it is possible that future communication neuro-technology would be utilised to connect with networked computers.

It will be practically difficult for people to keep their thoughts private once BCIs are developed enough for various mind-reading activities and deployed in diverse settings, which will provide a significant issue for personal privacy and human agency. How should one engage with and respect persons who utilize BCIs to enhance their memory, learning, or physical motor abilities, as well? Is it just that those with more power will get more than others without the technology? Technology is built and modernized to help and assist human world and its needs, not to replace the human race or it's autonomy or real-being. When BCIs and other artificial intelligence technologies have not completely demonstrated their capacity to guarantee that risks be kept below human levels, they should not be

utilised to replace and impair human decision-making ability. Human judgement and decision-making should remain autonomous, and this autonomy should be respected.

To avoid design defects that might have unfavorable consequences on other people and the environment, BCIs' stability, safety, security, flexibility, and dependability need to be continually enhanced. To prevent the execution of potential harmful intent, reasonable safety and security systems should be created and deployed progressively.

Conclusion

The capacity to combine the sophistication of the human intellect with the powers of contemporary technology is an exceptional scientific achievement, notwithstanding any possible hazards, and is starting to question our own perceptions of what it means to be a human.

BCI technology's promise is starting to materialize quickly, leading to technical advancements that improve our quality of life in real ways. Moving forward, it is critical to develop a clear path towards ethical neuro-engineering in the hopes of a time when the human mind and technology may work in unison to transcend our own biological limitations.

BCI is here to stay. And while we advance our research and studies into its new technologies, we now should focusing on questions such as how to make it legally and ethically feasible for the global population, whether or not we are prepared to face these tech-advances, who shall be able to use these technologies, to what extent and where can it be applied.

Integrating ethical concerns across the whole life cycle of BCIs can assure their long-term viability, enhance intelligence, and ultimately promote the well-being of individuals and the long-term progress of human civilization.

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Volume 5 Issue 3 September 2023

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