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Brain Hacking

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Abstract: Brain hacking is the idea of using technology to augment brain function and human intelligence. It may also be used for attempting to retrieve information from the brain (such as passwords, locations, etc..) without consent. It might include the use of smart drugs such as modafinil or electrical brain stimulation. With the increasing popularity of smart drugs, brain hacking is becoming a hot topic. This paper provides a brief introduction on brain hacking.

Keywords: Brain Hacking, Brain Computing, Brain-Tech, Neurotechnology, Mind Hacking, Neurohacking

I. INTRODUCTION

The brain is our greatest asset. It is the seat of higher cognition. The entire brain is fascinating and is not yet completely understood. The brain traffics in electricity and external electricity might influence how the brain operates. Some people with Parkinson's disease and depression have found relief in electricity. External brain stimulation is proven safe and effective [1].

Hacking the brain (also known as neurohacking) is the practice of attempting to enhance brainpower in areas such as memory, reasoning, intelligence, mood, productivity, and energy. It may also mean attempting to improve one or more of its functions such as memory, clarity, reasoning, mood, intelligence, and energy. Optimizing the brain may be as simple as taking some brain supplements (or smart drugs) that work to increase your cognitive capacity. Nootropics are very effective as supplements for brain hacking, but each can have slightly different potencies and effects on the brain. Meditation, practicing gratitude, writing, playing a musical instrument, games, sleep, nutrition, and other activities can improve mental wellness.

In the context of biology, brain hacking is really a subset of biohacking. It does not mean breaking through a system's weak links, but rather through surgical precision. The objective of brain hacking is to access the human brain so as to enable functional connections. Brain hacking for animals or humans involves four different tools: electric current, magnetic fields, drugs, and light. There is nothing unsafe about brain hacking.

Researchers are of the opinion that as we learn more about the brain, we should be able to use electricity to boost focus, memory, learning, mathematical ability, and pattern recognition. The idea of using electric currents to change brain function is not new. Deep-brain stimulation, involving electrodes implanted in patient's brains, is already used to treat Parkinson's disease as well as some severe cases of depression. Researchers already can transmit sound wave to the brain to provide a type of hearing for some deaf people. Electrical stimulation can provide the same energy boost as giving someone a cup of coffee. A popular one is transcranial direct current stimulation (tDCS), which is a non-invasive brain stimulation technique.

II. APPLICATIONS

Brain hacking will transform the following industries [2]:

- *Gaming*: Brain hacking has the potential to create hands-free "brain gaming."
- *Education*: Brain hacking will transform how we learn about the brain and nervous system in the academic setting.
- *Healthcare:* The technology is going directly inside the brain, where it can help address the debilitating effects of neurological conditions.
- *Sports Science:* Sports-related injury could be transformed by brain tech.
- *Entertainment:* In the entertainment world, brainbased research could transform content development.
- *Defense:* Brain hacking will play a role on the battlefield.

III. BENEFITS AND CHALLENGES

Brain hacking has several benefits. Perhaps the main benefit of hacking your brain is an increase in mental abilities. Brain hacking improves our mind, body, and soul. It boosts mental capacity and happiness. Playing games such as Sudoku helps stimulate the mind and is proven to give benefits such as better memory and improved concentration power.

As brain hacking progresses, researchers begin to speak up about the threats, risks, and ethical questions posed by brain hacking. Some suspect the possibility of individuals or organizations tracking or manipulating an individual's mental experience. The risks associated with the misuse of the brain hacking technologies remain largely unexplored.

Extracting private and sensitive information from the brain of users represents a significant treat to privacy and data protection [3]. Researchers still wrestle with how to address privacy and security issues. Putting ethicists in labs alongside engineers can ensure that privacy and security risks of neurotechnology. Health concerns may overshadow the ethical considerations.

The rapid advances being made with technologies that read or alter brain activity have raised concerns about their impact on patients' personal identity. New human rights that would protect people from brain information stolen, abused or hacked have been proposed by researchers. The information in our brains needs special protections in this era of neurotechnology [4].

CONCLUSION

Like the technology surrounding it, the meaning of "hacking" is evolving. Once we understand how the brain works as it stores information, a brain implant could mimic that effect. We are heading down a path that will allow us to supercharge the brain using electricity. Brain hacking will increasingly have

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potential legal applications that raise difficult legal issues [5].

AUTHORS

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