**BRAIN COMPUTING INTERFACE**

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**ABSTRACT:** Brain-computer interface (BCI) is collaboration between a brain and a device that enables signals from the brain to direct some external activity, such as control of a prosthetic limb. The interface enables a direct communications pathway between the brain and the object to be controlled. In the case of cursor control, for example, the signal is transmitted directly from the brain to the mechanism directing the cursor, rather than taking the normal route through the body's neuromuscular system from the brain to the finger on a mouse. A brain-computer interface technology represents a highly growing field of research with application systems.

A BCI is a device that consists of sensors that measure brain signals (often in the form of ‘electrodes’), an amplifier to boost the faint brain signals, and a computer that translates the signals into commands to control computer programs and/or devices. The components of BCIs can be made portable and/or wearable. BCI controlled devices span the range from assistive technology for people with paralysis, to internet devices (such as a smart phone) for healthy people and simple computer games or toys (such as a small helicopter). By reading signals from an array of neurons and using computer chips and programs to translate the signals into action, BCI can enable a person suffering from paralysis to write a book or control a motorized wheelchair or prosthetic limb through thought alone. Current brain-interface devices require deliberate conscious thought; some future applications, such as prosthetic control, are likely to work effortlessly. One of the biggest challenges in developing BCI technology has been the development of electrode devices and/or surgical methods that are minimally invasive. In the traditional BCI model, the brain accepts an implanted mechanical device and controls the device as a natural part of its representation of the body. Much current research is focused on the potential on non-invasive BCI. The body of knowledge about the human brain is growing exponentially, but questions big and small remain unanswered. Researchers have been using electrode arrays to map electrical activity in different brain regions to understand brain function. Until now, however, these arrays have only been able to detect activity over a certain frequency threshold. But ever since the invention of the computer and the first human-machine interfaces were born (HMIs), a dream of many technologists has been to create direct connections between computers and the human brain. These brain-computer interfaces (BCIs) would eliminate the lag inherent in the translation between thought → physical action → computer response. BCIs also allow people who cannot perform physical actions required for HMIs to bypass that real-world step and directly control powerful computer tools with the electrical impulses in their brains.

**CONCLUSION:**

In conclusion, BCI has progressively achieved several monumental milestones. The future impact of BCI in terms of patient care is slowly starting to come into focus. It is important to remember that the generation of physicians that we belong to will be in charge of knowing and integrating new technology, to provide better care to our patients.