

B.Tech. Final Year Project (2019-2023)

Broad Area of Project

Date: 21/12/22

Group No: 24

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Introduction to Broad Area of your Research:

Brain-computer interfaces (BCIs) are a type of technology that allows individuals to control external devices through the use of their brain activity. BCIs are typically implemented using electroencephalography (EEG) and other techniques that measure brain activity. These techniques can detect and interpret the electrical signals produced by the brain, which can then be used to control external devices. BCIs have the potential to revolutionize the way we interact with technology and can be used to improve the quality of life for individuals with disabilities or impairments.

Application/ Why it is Important?

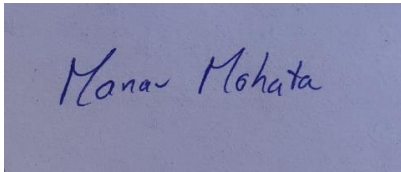
BCIs have a wide range of applications, including the control of robotic arms, BCI-controlled wheelchairs, BCI-based security systems, stress detection, and healthcare applications. The use of BCIs can improve the quality of life for individuals with disabilities or impairments and has the potential to revolutionize the way we interact with technology. For example, BCIs can be used to control robotic arms for individuals with mobility impairments, or to allow individuals to control a wheelchair using only their thoughts. BCIs can also be used to detect stress levels and potentially help individuals manage their mental health.

Design Issues / Requirements /Need for the further study:

Design issues in BCIs include the signal-to-noise ratio, which refers to the quality of the brain activity being measured, and real-time modelling, which refers to the ability to process brain activity in real-time. Improving the classification of brain activity is also an important design issue, as it can help to improve the accuracy and reliability of BCIs. The requirements for BCIs include EEG devices for data acquisition, microprocessor and microcontroller boards for controlling the device, and interfaces for controlling external devices. Input/output (I/O) devices may also be required in order to interface with external devices.

Issue that will be addressed by your Project:

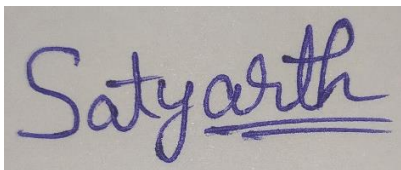
One issue that will be addressed in this project is the signal-to-noise ratio in BCIs. We will aim to develop an efficient model that reduces the signal-to-noise ratio, which can improve the accuracy and reliability of BCIs. Additionally, we will address design issues in the BCI model and aim to improve real-time modelling capabilities in order to further enhance the performance of the BCI. This will be done through the use of advanced machine learning techniques and optimization algorithms. By addressing these issues, we hope to make BCIs more reliable and accessible for a wider range of applications.



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