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International Journal of Advancements in Technology

Commentary

Overview on Artificial Intelligence Technology with Brain Computing Interface

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INTRODUCTION

In recent years, researchers have focused on hybrid applications of quantum computing and brain computing interfaces. With the development of neural technology and artificial intelligence, scientists are increasingly studying brain computing interfaces, and the application of brain computing interface technology to more fields has gradually become the focus of examination. The field of brain computing interfaces has developed rapidly over the past decades, but the core technologies and innovative ideas behind seemingly independent brain computing interface systems have been grouped together in terms of their integration with quantum physics. This paper provides a detailed description of hybrid applications of quantum computing and brain computing interfaces, highlights current issues, and suggests study directions for hybrid applications.

They uniquely proposed the concept of quantum computing in terms of utilizing quantum mechanics for reversible computation, reducing heat dissipation, and efficient quantum simulation. Parallelism makes quantum computing more powerful than classical computing when it comes to processing and storing data. Since 1995, quantum computing has gradually emerged as the world's most popular training field, and various schemes to realize quantum computing have been proposed one after another. Various quantum circuits are used in quantum computing study.

A Brain Computing Interface (BCI) is a direct communication channel between the central nervous system and a computing without the help of the peripheral nervous system. In this sense, systems that directly interact between the brain and external devices can be considered BCI systems. While his early BCI technology provided a tool for movement disorders to communicate with the environment, the use of BCI has made it possible to monitor brain conditions, neurological rehabilitation, and improve human cognitive function. Many medical and non-medical applications have been expanded. With the rapid development of neuro technology and Artificial Intelligence (AI), the brain signals used for communication between the brain and the computing have evolved from sensory levels, evoked potentials and perceptions, and event related potentials to higher cognitions, using BCI into a new era of hybrid intelligence. At present and in the future, BCI and quantum computing are major frontier research hotspots in the world, and scientists are paying more and more attention to their comprehensive applied research. This white paper therefore provides a detailed overview of the development of quantum computing and BCI.

This paper introduces a studies document at the hybrid utility of quantum computing and brain computing interface, beginning from the principle type of quantum computing-associated algorithms and brain computing interface, then the sensible utility of quantum computing and brain computing interface interfaces, after which finishing with the blended utility. The relaxation of this evaluation is organized as follows, the second one phase specially describes quantum computing, which includes the improvement of quantum computing and associated algorithms of quantum computing, and the 0.33 phase specially describes the brain computing interface, which includes the type of the brain computing interface and the sensible utility of brain computing interface, and the fourth phase specially describes the utility of quantum computing and brain computing interface after mixing, which includes recursive quantum neural networks and sensible manipulate structures primarily based totally on quantum gentle computing. The 5th phase introduces the modern troubles and destiny improvement instructions of quantum computing and brain computing interface, and the 6th phase summarizes the quantum computing and brain computing interface and makes prospects.

In 1982, physicist Richard Feynman first proposed the concept of a quantum computing. After nearly 40 years of development, quantum information, quantum computing, and quantum simulation have made great progress, but in recent years, the development of the whole field has adopted different characteristics and the correlation structure of quantum computing. People pay more attention to including more qubits to ensure the accuracy of quantum operations to increase the number of qubits in quantum computing and quantum simulation. Some recent experiments reach that most classical computing s can simulate quantum bits and so-called quantum supremacy or supremacy can be achieved.

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Received: 06-Dec-2022, Manuscript No. IJOAT-22-20662; **Editor assigned:** 08-Dec-2022, PreQC No. IJOAT-22-20662 (PQ); **Reviewed:** 22-Dec-2022, QC No. IJOAT-22-20662; **Revised:** 20-Feb-2023, Manuscript No. IJOAT-22-20662 (R); **Published:** 27-Feb-2023, DOI: 10.35248/0976-4860.23.14.233.

Citation: Karazhanov D (2023) Overview on Artificial Intelligence Technology with Brain Computing Interface. Int J Adv Technol. 14:233.

On the other hand, however, there is a large gap between experimental platforms and the thousands of qubits required for practical quantum computing, and the precision of quantum logic gates and the threshold of quantum computing are still far from significant improvements. One of the most important is the need for scalable qubits in the system. Scientists say quantum computing and quantum information are at the forefront of modern science, with wide potential for development. In the next part, I will mainly discuss his two aspects of quantum algorithms and quantum computing applications.