Quantum computing

is an emerging field that leverages the principles of quantum mechanics to process information in ways that classical computers cannot. My engagement with this domain has been enriched through the **two-semester "Introduction to Quantum Computing" course offered by Qubit by Qubit in partnership with The Coding School and Google AI**. This comprehensive program delves into the fundamentals of quantum mechanics, quantum algorithms, and their practical implementations, providing a solid foundation for aspiring quantum computing professionals.

During my **internship at VIPs-TC**, I developed a **Quantum Neural Network (QNN)** for gate design in brain-interface applications. This project involved processing EEG data to enhance brain-computer interface performance. The QNN utilized entangling layers to improve expressivity, addressing challenges related to circuit depth and trainability. Notably, research indicates that subject-specific Recursive Quantum Neural Network (RQNN) EEG filtering can significantly enhance brain-computer interface performance compared to using raw EEG data alone.

In addition, I have implemented the **Quantum Approximate Optimization Algorithm (QAOA)** and **Variational Quantum Eigensolver (VQE)** for sequence generation tasks. QAOA is a hybrid quantum-classical algorithm designed to solve combinatorial optimization problems by approximating solutions through a series of quantum operations. Its efficacy in addressing complex optimization challenges makes it a promising tool in various applications.

VQE, on the other hand, is employed to determine the ground state energy of a given Hamiltonian. By utilizing a parameterized quantum circuit and classical optimization techniques, VQE iteratively minimizes the expected energy, making it particularly useful in quantum chemistry and materials science.

My journey through structured academic programs and practical projects has solidified my interest in quantum computing. I am enthusiastic about contributing to this rapidly evolving field and eager to engage with others who share this passion.

Start coding or generate with AI.