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Quantum Machine Learning: Revolutionizing Data Processing Capabilities

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Abstract: *Quantum Machine Learning (QML) is a rapidly growing interdisciplinary field that integrates the power of quantum computing with a conventional machine learning methodologies to tackle complex data analyze problems. The Traditional machine learning algorithms are increasingly challenges by issues of speed and scalability that affects. In contrast, a quantum computing introducing a transformative approach by using a core quantum principle and like superposition, entanglement, and quantum parallelism. These quantum features enable the efficient handling and interpretation of large-scale, high-dimensional data beyond with the capabilities of classical system. This work is delves into the essential concepts of Quantum ML, examines prominent quantum algorithmic processes, and highlights their potential advantages over classical methods. That Propagates Additionally, it addresses current technological limitations in quantum hardware and explores the future scope of QML in sectors such as healthcare, finance, cybersecurity, and AI that is artificial intelligence field. Despite being in its nascent phase of wave, Quantum ML demonstrates significant promise in redefining the landscape of data processing and intelligent decision-making across whole industries.*

Keywords: Quantum Machine Learning (QML),Quantum Computing, Machine Learning, Qubits, Superposition, Entanglements

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