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Quantum Computing in Machine Learning - The Future of Quantum Computing

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Abstract: *In order to solve challenging optimization issues, analyze data effectively, and improve the capabilities of current machine learning algorithms, quantum computing has the potential to revolutionize the area of machine learning. The proposed work examines the fundamental ideas and methods of quantum computing—including quantum gates, quantum circuits, and quantum algorithms—as they relate to machine learning in this abstract. Various quantum computing applications in machine learning, including quantum neural networks, quantum support vector machines, and conventional methods influenced by quantum mechanics are also discussed. A review of state-of-the-art in quantum computing for machine learning, including recent advancements in quantum hardware and software has been done and the future prospects of this fascinating area has been examined.*

Keywords: Machine learning, Quantum algorithms, Supervised learning, Regression, Neural networks

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