Quantum Computing Enhancements in Machine Learning Algorithms

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Abstract

This research investigates the potential of quantum computing to improve machine learning algorithms, specifically focusing on optimization tasks. By leveraging quantum superposition and entanglement, we propose a novel hybrid algorithm significantly reducing computation time for large datasets. The results indicate a dramatic increase in speed and accuracy for classification and clustering problems, demonstrating that quantum-enhanced machine learning can outperform traditional approaches. This work paves the way for future explorations into practical applications of quantum machine learning.

Keywords: Quantum computing, machine learning, optimization, classification, clustering.