

Quantum Computing in Artificial Intelligence: A Paradigm Shift

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Abstract: *Quantum computing and artificial intelligence (AI) are two of the most transformative technologies of the 21st century. The convergence of these fields promises unprecedented advancements in computational capabilities, enabling solutions to complex problems that are currently intractable for classical computers. This paper explores the intersection of quantum computing and AI, examining the potential impacts, current research, challenges, and future directions. By leveraging quantum phenomena such as superposition, entanglement, and quantum parallelism, quantum computing can enhance AI algorithms, offering exponential speedups and new methodologies for machine learning, optimization, and data analysis.*

Keywords: Quantum Computing, Artificial Intelligence, Quantum Machine Learning, Quantum Algorithms