

Implementation of Quantum Optimization Algorithm

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Abstract: *Quantum computing is a quickly growing research field. This article introduces the basic concepts of quantum computing, recent developments in quantum searching Quantum computers are computing devices that can theoretically have computed power that is many orders of magnitude greater than that of conventional computers. The quantum bit, or qubit, which is the quantum state of electrons in an atom, is the fundamental data unit in a quantum computer. Qubits have the potential to exist in several superposed states at once, making them capable of carrying much more data than do standard two-state bits. The mathematical basis of the proportionality of qubit states is like that of the input weights of neural networks. The technology of quantum computers has made some progress, but much more work needs to be done in terms of research and development before it can be used in everyday life. There are also views that suggest this outcome is impossible. A recent field of study known as quantum computing (QC) combines components of computing, physics, and mathematics. Interest in quantum computing is rising among academics, technologists, and businesspeople. For the past ten years, it has given researchers in the scientific, technological, and industrial disciplines a place to conduct their work. The fundamentals of QC have been developed using notions from quantum physics. The parallel processing functionality in QC has simplified the currently employed algorithms. Numerous optimization-related challenges and issues were solved with the aid of this function. Intelligent computational techniques that were inspired by quantum mechanics have been applied in a variety of fields. A qubit's ability to be in superposition is one of its characteristics that distinguishes it from a conventional bit. Superposition is one of the fundamental principles. Entanglement is another one of quantum physics' counterintuitive occurrences. When each particle's quantum state cannot be characterized separately from the quantum state of the other particle(s), a pair or group of particles are said to be entangled.*

Keywords: Qbits, QC, Quantum physics, Quantum Mechanics, Parallel Processing, superposition, Entanglement

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