Demystifying Quantum Computing Technology

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Quantum computing technology provides an exponentially larger computation space and power derived from quantum mechanics principles such as superposition, entanglement, interference, coherence. With these principles, quantum computing provides solves problems that are not tractable to conventional computers. Due to these reasons, research in quantum computing is fascinating curious minds of researchers in several disciplines.

Over the past few years, researchers have achieved several milestones in hardware, software and algorithms that are necessary in building quantum computing systems. Similarly, in the recent past, several technical articles and news items are published narrating the development of small-scale quantum computers that are operating with few Q-bits. It is expected that commercial quantum computers would be available in few years. While quantum computers can not completely replace conventional computers, they can provide their services where the problems are not tractable for conventional computers.

This lecture provides a detailed understanding of quantum computing, building blocks of quantum computers, properties, implications & applications of the quantum computing technology. In particular, the focus would be on the implications of quantum computing in Machine Learning and Cyber Security.