**Introduction to Quantum Computing**

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Computers use classical bits in processing their operations. These bits have the capacity of holding either a 1 or a 0. However, lately, a third possibility is being debated and deliberated upon: what if a bit could hold a 1 and a 0 simultaneously? These hypothetical bits are called qubits. Don’t judge them yet, these bits may still be in theory, but several researchers have validated their possible existence in the immediate future, so much as to predict their creation to occur in the next 10-12 months. Though this might be a little far-fetched, qubits promise the beginning of a new era, and with them they bring an era of highly advanced computers, the Quantum Computers.

The hype around this technology might be a little difficult to understand for a day-to-day computer user, but we promise that by the end of this article, you will share the same excitement about them as the world does. First and foremost, the advantage of a quantum computer is the ability to scale its performance exponentially with a negligible increase in qubits. It is said that a 300 qubit computer could do more calculations than there are atoms in the universe. Not just that, with quantum computers, Artificial Intelligence will see a rapid growth which in turn will pave the way for the so-called "gadgets of the future.”

Apart from the advantages of scaling in performance, we get an added benefit of downsizing. An easy way to explain it would be by giving a real time example: the world’s most powerful computer (whose size is equivalent to that of half of a football field) could fit on a small chip of 50-60 qubits. That would enable our smartphones to have the functions of a super computer.

The race towards quantum computers has already begun. Many big players like Google have claimed to create these computers by the fall of next year. This race will definitely impact the dynamics of the world. It will surely give us a means of exploring and understanding our complex universe, but at the same time will open doors to unforeseen threats

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