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Future computing – be prepared not scared

By **IonMy** on August 28, 2018 in **Sponsored Content**



Nanotechnology, DNA storage and quantum computing may seem a long way from caring for our elderly – but many aged and community care workplaces already benefit from technological advances.

We are in an age where computers can reduce paperwork and tedious tasks, allowing us to focus on the essential areas of care that can make a difference.

Imagine what significant changes future computing is on the cusp of delivering to our daily lives. Grasping a basic understanding of the possible impacts to come will help us prepare to adapt instead of being scared of pending change.

We've come a very long way since the room-sized computers of the 1950s. But as computing gets smaller, faster and more complicated, it's obvious that there is a physical limit to how small and powerful traditional computers can get. And we're pushing up against that limit. That is why scientists are investigating completely new forms of technology for future computers.

Nanotechnology

Nanotechnology simply means technology on the nanometre scale – very, very small. Being able to produce nano-sized computer parts is important because society expects computers to become faster, smaller and capable of processing more. Yet, shrinking circuits is approaching its limit, and the closest we've come to faster computing is linking many computers together and calling them a 'supercomputer'.

To advance, we are moving towards parallel computing and, with nano-scale components, we can pack heaps more into a computer and aim to run massively parallel processes.

With the advancement of nanofabrication techniques, carbon nanotube material can now be used to create the electronic components needed for the internal workings of computers. They are naturally smaller than current parts, which means future computers can become smaller and smaller, but also more powerful.

One day soon the computer at the care bedside may be as small as your fingernail. Instead of using a keyboard, it will operate on face recognition and voice commands, perhaps with an expert system installed to provide live healthcare and lifestyle advice.

DNA computing

Just as small silicon cells store information on a computer hard drive, our own DNA stores information, but

in a much smaller space. A mere gram of DNA is able to store close to 1 trillion gigabytes. Scientists have recently developed new ways of folding DNA into different 'origami' shapes, beyond its conventional double helix.

This has opened up new possibilities of using DNA beyond its genetic and biological purpose, turning it into a Lego-like material for building nano-scale objects. Perhaps DNA and nano-computing will become one.

DNA in computing may help solve the problems of storing the colossal amounts of data being generated today. A computer with DNA storage might be capable of storing billions of times more data than current computers. So, in the future, DNA might serve even more creative purposes than simple information storage.

Quantum computing

Computers today are binary – they are either on or off, and their operations must be sequential, involving calculation after calculation, one by one.

Quantum computers aren't limited to two states; they encode information as quantum bits, or qubits which work together to act as computer memory and processor. Because it holds multiple states simultaneously, a quantum computer works in parallel and has the potential to be millions of times more powerful than today's most powerful supercomputers.

And, just as silicon chips replaced the transistor, quantum computers may one day replace silicon chips. If they can be scaled up to enough qubits, quantum computers could quickly and easily perform calculations that are incredibly time-consuming or impractical on conventional computers. This would result in – literally – a 'quantum leap' in performance.

Research is progressing at a rapid rate, including Google, Microsoft and IBM, along with many universities and research labs. Think about the possibilities – perhaps the future USB flash drive may contain microscopic DNA strands of encoded information. Instead of 'cloud storage', we may eventually carry our data around with us in our own DNA.

Embracing the change that can change your future

ionMy keeps an eye on the future for you – while delivering cutting-edge benefits in the present.

Computing is already allowing us to enjoy and improve our work. Future computing could multiply those benefits and advantages for us all. That sort of advancement is change that we need to embrace and certainly not something we should fear.

About the Author

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