Future Computers

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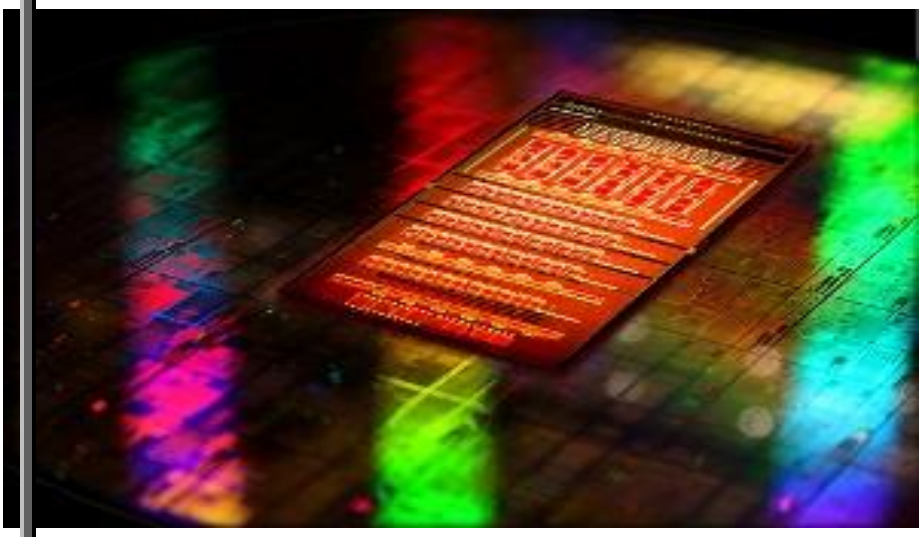


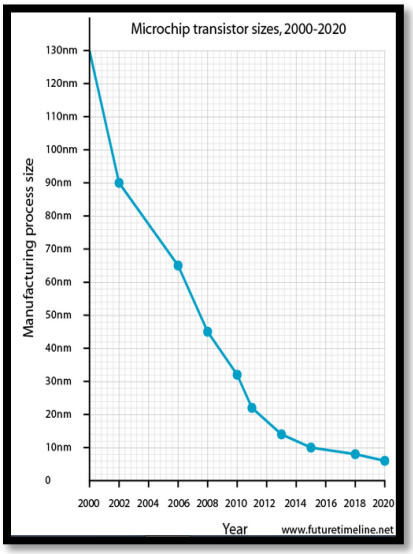
FUTURE COMPUTER TECHNOLOGY

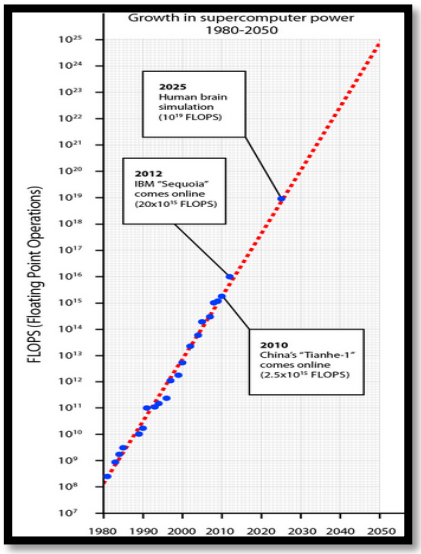
FUTURE COMPUTERS

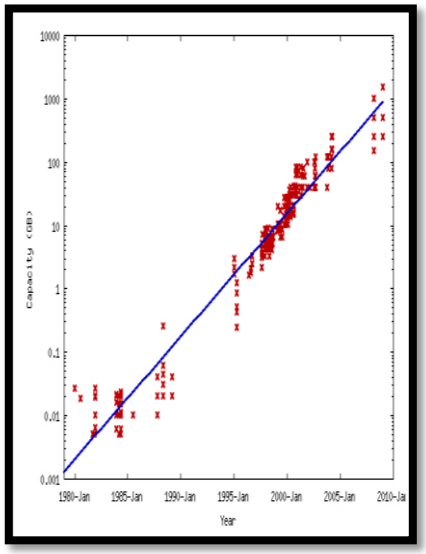
Introduction

The computer technology evolves from a machine which requires separate manual actions to perform certain arithmetic function like there used to be punched cards and then computer with stored programs. Then human beings turn their focus towards vacuum tubes and solid state transistors. Presently there total computing is depended on their fast increasing and improving integrating circuits. But still human being strive for more faster, sustainable, less spacious computing world which have better problem solving and computing power.

According to moors law the number of transistors in computer processors would double every two year, it looks pretty all right as for as processing speed is concerned which is increasing twice every two year. in 2010 IBM introduce processors which are capable of computing at 5.15 GHZ if this speed is taken as reference then in 2050 we will have processing speed of around 5.5 petahertz , which would be even capable of making human mind simulation. Which means that the human are going in a right direction as far as processing speed is concerned. But there are many limitation for such phenomena to happen these include materials requirements for hardware to sustain that much speed, means of data transfer and power requirements.







These computer data graphs are attached to augment the above discussion.

Future trends

There are many plans which are in processes and discussion to make this world equip with better computing processing power few are discuss below.

Clouding computing

Cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure-as-a-Service

(IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). The name cloud computing was inspired by the cloud symbol that's often used to represent the Internet in flowcharts and diagrams. The advantage is store all the data at one place instead of keeping separate data for each device so less storage space requirement. It's like putting all your data in G mail account and now you can excess all of it from different hardware's devices through internet instead of keeping same data for each device. Since there would be less requirement of space which leads to minimum requirement of computing speed hence existing computer will act faster.

Light driven computers

Light can carry large amount of data more efficient and quickly as compare to copper wires. they also many issues related to copper wires including loss of data during transmission , heating , limited bandwidth or data transferring capability. the optical fibers are already in use for transferring data many miles to deliver emails, images and videos so now the plan is to used them for transferring their data within computers instead of copper wires. They are also many advantages other than fast data transferring that includes less space requirement and less energy requirement to power them. Which means computer will processes thousands of time faster as compare to today computers. Important property that makes light based computers exponentially faster at tasks such as breaking encryption codes or searching huge databases. Instead of interference, conventional computers use particles called electrons to perform tasks sequentially, like a librarian looking for a book by inspecting the entire library one volume at a time. Interference essentially allows you to make clones of that librarian—one librarian for every book—and set them all loose at once. The new device proves that using light interference is just as effective as quantum interference in retrieving items from a database.

There are certain difficulties in handling light based computer, includes focusing of light for such a minute scale is inherently difficult. Once you reach smaller wavelength than the visible light you reach a limit called diffraction limits and it's physically impossible to focus light any more. The other constraints are material and hardware's.

Advancement in light based computers

To address the constraints in a way of building light bases computer, scientist have proposed many ideas and solutions. These includes material improvement for hardware requirement and techniques in dealing with wave paths of light

Tunnel device

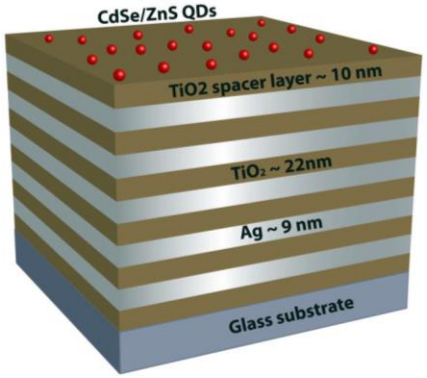
Scientists have proposed tunnel like wave guide for light waves to be used in computer that gets around its natural limits.

Nano plasmonic devices

These device are tiny Nano scale metal structure which are more than 100 times smaller than human hair but are capable of directing lights waves. The structures have been tailor-made to interact with light in an unusual and highly controlled way. This means they could one day be used to build new kinds of super-high-speed 'optical computers.

Quantum Dots

Quantum dots consists of layers of silver, titanium oxide and other tiny components. Such Meta materials could make it possible to use single photons -- the tiny particles that make up light -- for switching and routing in future computers. While using photons would dramatically speed up computers and telecommunications, conventional photonic devices cannot be miniaturized because the wavelength of light is too large to fit in tiny components needed for integrated circuits.



Quantum Dot

There are also many more materials and metallic alloys on which scientist are working to make these optical technology works

DNA based computers

Scientists have proposed to use DNA strands for computing operations. The presently used silicon based computers are far less inferior to DNA bases human mind. These is manly serial computing nature of silicon based computers. The DNA based computer has the potential to deal with fizzy data, going beyond digital data.

Photonic logic

Photonic logic is the use of photons (light) in logic gates (NOT, AND, OR, NAND, NOR, XOR, XNOR). Switching is obtained using nonlinear optical effects when two or more signals are combined. Resonators are especially useful in photonic logic, since they allow a build-up of energy from constructive interference, thus enhancing optical nonlinear effects. These gates would results in faster computing operation as compare to present gates.

Conclusion

The scientist are working day and night to develop faster, efficient and user friendly computers which have stronger problem solving capability to ease the mankind life. There are many expectations that in near future we would made further advancement in computer technology.