

Computer Technology : Nano Computer

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ABSTRACT

This paper presents the overview of Nanocomputers and some discussion about Nanotechnology as Nanocomputers are based on this technology. Nanotechnology is the study of manipulation and manufacture of extremely minute machines or devices. These devices are too small to the point of manipulating the atoms themselves to form materials. We can also say that the nanotechnology is self-replication, which makes an effective route to truly low cost manufacturing having more storage capacity.

This paper is an attempt to cover the following:

- ✓ Overview of nanotechnology
- ✓ Nanocomputers and its technologies
- ✓ Special attention given to a certain important area in nanocomputing.
- ✓ Upcoming technologies coming in future having small scale and larger data storage capacity.\

Keywords : Nano Computer, Nano Technology, Mechanical, Electonic, Biochemical And Quantum Technology

I. INTRODUCTION

NANOTECHNOLOGY:

Nanotechnology can be defined as the development and use of technology on an extremely small scale. Specifically, any technological creation ranging in size from 0.1 to 100 nm. One Nanometer is a millionth of a millimeter. It is all about building things atom by atom and molecule by molecule. Manufacturing products made from an atom, the property of those products depends on how those atoms are arranged.

Inventor of Nanotechnology-

Dr. K.ERIC DREXLER

When K. Eric Drexler popularized the word 'nanotechnology' in the 1980's. Drexler spent the next ten years describing and analyzing these incredible devices, and responding to accusations of science fiction. The U.S National Nanotechnology

Initiative was created to fund this kind of nanotech: their definition includes anything smaller than 100 nanometers with novel properties.

NANOCOMPUTERS :

Nanocomputer is the term given to the computer which is even smaller than microcomputer. With computers being an integral part in today's society, nanocomputers are the easiest and most likely route in which computer development may continue. Its size may be approximate or may be smaller than a Credit card. Nanocomputer can be built in many ways i.e. Mechanical, Electonic, Biochemical and Quantum Technology.

The general definition of a nanocomputer is a computer which is measured in nanometers. In other words, Nanocomputers are those whose components are small enough to be measured in nanometers and whose dimensions are microscopic.

Before mentioning the types of Nanocomputer, let's go through the Moore's Law

According to Moore's Law, the number of transistors will double after every eighteen months that are fitted on a silicon chip. The transistor is the most important component of a computer today.

(More transistors = larger computer memories and more powerful computers)

Presently, microprocessors have more than five billion transistors.

By the year 2020, the trend line of Moore's law states that there should be a one nanometer feature size.

NANOCOMPUTER TECHNOLOGIES

Electronic: It operates in a manner similar to the way microcomputers work. The main difference between them is physical size. Now a days, Transistors are compressed into small silicon chips so that processor can have more storage capacity and larger power facility. In Electronic nanocomputers, the concept of nanolithography is being used. Nanolithography is the art and study of a number of techniques for creating nanometer-scale structures where dimensions are in the order of nanometers (units of 10^{-9} meter or millionths of a millimeter).

Chemical & Biochemical: Biochemical technology is that which is close to real world and exist in nature. Chemical and biochemical computers store and process data in terms of chemical structures. It is as same as the mechanisms for animal brains that are not properly understood by human beings. Engineers must know how to get individual atoms and molecules so that calculations can be performed well and are controlled.

Mechanical: Mechanical nanocomputers are those which uses tiny moving components called as nanogears so that information can be decoded. We can say that mechanical computers works same as Mechanical calculators works. Machines & computers

would be assembled by the Mechanical Positioning of atoms or molecular building blocks, one atom or molecule at a time. This process is known as 'mechanosynthesis'.

Quantum: The Quantum nanocomputers are planned to hold each bit of data as a quantum state of the computer. By means of Quantum mechanics, Information would be stored as the spin or state of an atom. Technology of this kind is already under development in the form of single-electron memory (SEM) and quantum dots. Instantaneous electron energy states are difficult to predict and even more difficult to control.

FUTURE OF NANOTECHNOLOGY :

- ✓ Nanotechnology has huge potential in building smaller and smaller computers.
- ✓ Far greater amounts of information would be stored in the same amount of space.
- ✓ In the coming days, all the computers in the world could fit into the space of a square inch. Such efficient data storage capacity would be of great use in the field of business and scientific research in different fields.
- ✓ Nanocomputers would also have a great possibility for the entertainment industry. Different computer games and virtual reality systems could be created with such great data storage and power saver capability.
- ✓ In upcoming years, the technology have been proposed for the evolution of Nanorobots.

II. CONCLUSION

It is worth pointing out that the trends in the development of computer hardware have been remarkably steady for the last 50 years. The Nanocomputers that we studied will bring many benefits to not just medicine, but to millions of people living on this Earth. First of all, just the hope of early cancer detection and better ways of treatment can brighten the spirits of the many cancer patients and their close

ones. However, this device is not only going to lift people's hopes, but it will enhance cancer treatment greatly.

Since our device will allow doctors to single out only cancerous cells, it will not destroy the healthy ones. This will be a big progression in the treatment of cancer because one of the most popular treatments for cancer was chemotherapy. In chemotherapy, radiation would kill the cancerous cells in the body, but the healthy ones would also be destroyed. This would leave patients tired and extremely weak. It would also leave the patient with a weakened immune system, when their immune system was very weak due to cancer in the first place. However, with the precise destruction of only cancerous cells, this could be prevented or at least greatly decreased. Also, in chemotherapy, some people would have the side-effects with no benefits. They would be incredibly exhausted and there would be no improvements in their cancer. Our project will dispose of these troubles and cancer will no longer be an incurable disease, but will become more like an extinct disease.

Regardless of what extrapolation of trends or polls might suggest, we should keep firmly in mind that how long it takes depends on what we do or don't do. A focused effort with resources appropriate to the magnitude of the task would speed development. If we do little or focus resources on short term goals, fundamental developments might be much delayed.

To quote Alan Kay:

"The best way to predict the future is to invent it."

III. REFERENCES

- [1]. <http://www.thestudymaterial.com/presentation-seminar/computer-presentation/54-presentation-nano-computers.html?start=1>
- [2]. <http://www.mitre.org/tech/nanotech/futurenano.html>
- [3]. <http://whatis.techtarget.com/definition/0,,sid9/gci514014,00.html>
- [4]. A true myth – NanoComputers Std. IEEE Author. James Peterson
- [5]. Simple guide to Nanocomputing pub. Delhi Author Robert Wullmon
- [6]. Applied Quantum + Nano Author Rafter James
- [7]. How Stuff Works.com
- [8]. IEEE standards.coms
- [9]. Nanospace.com
- [10]. Google.co.in
- [11]. Nanoimages.com