# Role of Computer Science and Some Problems

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**Abstract:** *The aspects such as natural sciences being the basis of all the applied sciences, simultaneous development of natural sciences and applied Sciences, role of scientific discoveries and inventions in creatingand providing the conditions for the mental change and transformation of the people are discussed. Positive role of Computer Science is projected. Negative role and effects such as effect on eyes (CVS); effect on body-parts (in the form of headache, muscle- pain, joint-pain, neck-pain, and shoulder-pain); fragmented nature of the information available on Internet;and, need of using labour-intensive technology, and in this light necessity of a comprehensive review of the whole system of utilisation of computers and to take necessary steps, are studied; and solutions are proposed and projected.*

**Keywords:** *Natural sciences, applied sciences, computer science, positive role, negative role, EMR, CVS, body-parts, fragmented, labour-intensive technology.*

## I. INTRODUCTION

Natural Sciences (Chemistry, Physics, Mathematics, Botany, Zoology) constitutethe basis of all the Applied Sciences like engineering sciences and medical sciences. By discovering inner laws governing all the phenomena, the natural sciences continuously clear the path for the development of applied sciences. On the other hand, continuous development of applied sciences projects and puts forwards practical and theoretical problems, which are solved basing upon down-to-earth process of research in different areas of natural sciences. In this way, both natural sciences and applied sciences develop simultaneously. There is urgent need to grasp this organic relation between natural sciences and applied sciences.

The natural sciences havesolved so many mysteries of nature by discovering the inner laws governing the different phenomena occurring in nature. The natural sciences and applied sciences have developed with a fast pace during the last one hundred years. So many discoveries and inventions are there, which provide facilities for the people. This is a great achievement of natural sciences and applied sciences.

Apart from the material gains provided by scientific discoveries and inventions, the natural sciences and applied sciences have created and provided the conditions for the mental change and transformation of the people of all nations of the world, for tearing off the system of retrograde and irrational thinking, the system of superstitions, the system of feudal-ideology, and so on and so forth. Thus in this way, the natural sciences and applied sciences haveprovided and are providing the ideological (theoretical) basis for rejecting the irrational thinking.

Natural sciences and applied sciences are developing one another and are moving together to contribute in the advancement of the economic, social, and cultural levels of the peoples and in creating conditions for advancement.

Computer Science is one of the applied sciences, which began to develop in the last about sixty years. First, Electronics developed as a distinct separate field from Electricity field, and then from Electronics field, Computer Science developed as a distinct separate field. In the last thirty years, Computer Science has developed at a very fast pace.

## II. POSITIVE ASPECTS OF COMPUTER SCIENCE

Computer Science has helped and is helping in Research-Work of all fields (natural sciences, applied sciences, and social sciences), by using the information available on Internet on a mass-

scale, and by doing intricate calculations. Many theoretical and practical problems are solved with the help of Computer Science, for example, we can solve ordinary and partial differential equations numerically. Computer Science is used to develop managerial functions, and to make official-work more easy and effective. It is used to control space-vehicles and in military command and control; to design buildings, bridges, and machines; to control inventories to minimise material-cost; to assist in railway-reservation; to grade examinations and process the results; to aid in teaching; to systematically store and quickly retrieve data on land-records; and to play games (like video and chess games). Any task which can be carried out systematically using a precise step-by-step method, can be performed by a computer. To Internet, hundreds of millions of computers are connected, and important achievement of this technology is that it is capable to accommodate double number of computers every year. The speed of computers is doubling each year. There are advances in computer hardware and software leading to development of graphic input and output devices and associated software, as a result of which area of Computer Graphics has been developed which deals with generation, representation, manipulation, and display of pictures with the aid of a computer. There is development of Multimedia which is a combination of graphics (static data), and audio & video data (dynamic data).

## III. SOME PROBLEMS CONCERNING SOCIETY AND HUMAN-BEINGS

There are so many ill-effects of computer on human-health. While working on a computer, there is continuous strain on the eyes. If it is not taken care of, then there may be permanent damage to the eyes. CVS (Computer Vision Syndrome) has been on the rise in IT-Industry for many years, the symptoms of which are: eye-strain, blurry-vision, dry-eyes, fatigue, and double-vision. When a person sits to work on a computer for 3-4 hours continuously without break, then:**(i)**blinking-rate of the eyes is reduced to a considerable extent, i.e. 2-3 times per minute as compared to normal person's blinking-rate of 10-15 times per minute, the reduced blinking-rate results in reducing wetting of the eyes which further leads to lowering the supply of oxygen to the eyes; **(ii)** focusing-problem which means eyes become unable to focus smoothly and easily on a particular object even long after the completion of work; **(iii)** eye-irritation is caused. Advance Eye Hospital and Institute, Mumbai in 2013, conducted a survey among 956 corporate employees, and it is found that 25% employees suffered from dry-eyes, 15% suffered from fluctuating-vision, 30% suffered low accommodating-power.

To tackle CVS, following steps must be taken: **(i)** Eyes should be blinked after regular intervals of time, since each time a fresh layer of tears will pass through cornea helping to deliver oxygen to the cornea. **(ii)** Rule 20/20 must be applied, which means that we must break after every 20 minutes and focus on a far object for at least 20 seconds. **(iii)**Computer screen and keyboard must be positioned with respect to body-height so that both are within one's field of view. **(iv)**Position of computer must be such that light of the windows and of all the sources of light must not create a glare on the screen of the computer. **(v)** The brightness of the screen should neither become like a source of light nor should be it look like too dark. **(vi)** Anti-glare glasses and screens, flicking-free monitors should be utilised, since prolonged-flickering is a dangerous threat to the health of the eyes as it strains the eyes**(vii)** If we are required to consult some written-pages or book continuously while working on the computer, then these must be placed on a copy-stand adjacent to the screen. **(viii)** The computer-screen should be at about distance of two feet from the eyes. **(ix)** The centre of computer-screen should be at $10^0$-$15^0$ degrees below and top of screen should be $10^0$ above the straight-ahead seeing position. **(x)** Eye-specialist must be visited at regular intervals of about six-month time to keep a tab on eye-health.

Also there are results in the form of headache, muscle- pain, joint-pain, neck-pain, and shoulder-pain. It is due to continuous-sitting to work on the computer. The eyes are strained severely, which further ill-affects the various parts of the human-body. If there are serious vision-problems, then one has to sit in an awkward-posture to compensate these vision-problems, and this definitely results in developing neck-pain and back-pain. Also working on computer results in repeating same movements again and again using the same muscle groups in hands, arms, and shoulders, all

this leading to a repetitive-stress-injury. To tackle these physical-problems, mini-breaks and mini-walks of five minutes several times a day should be taken, during which arms, legs, back,neck, and shoulders should be stretched. NIOSH (National Institute of Occupational Safety and Health), USA has recommended a 15 minute break after every 2 hours of continuous-work for users having moderate work-load, and a 15 minute break after every 1 hour of continuous-work for users having high work-load.

All the electronic-devices, like computers, mobiles, TV, etc. emit Electro-Magnetic-Radiations (EMR). They have heating-effect. As compared to other tissues, cornea has fewer vessels. So, cornea is more likely to be affected by heating-effect. This may cause cataracts. Children less than 6 year'sage will find difficulty to train the brains to focus the eyes after so much strain due to 3-D viewing/gaming on mobile. Also there is evidence that these radiations increase the rate of skin-rashes and

miscarriages. To minimise this risk, low-emission monitors should be used as these emit less EMR.

We may gain an ever-increasing quantum of information by using computers.It is a positive aspect. But the most of the material available on Internet is fragmented. This fragmented information should be synthesised to have generalisations and to arrive at correct conclusions. If it is not done, then so much information made available on computers will go astray, moreover, it will lead to create confusions and to waste the precious time of the human-beings.

Our country is an under-developed country. Here unemployment is wide-spread, not only in vast rural areas, but also among semi-skilled, skilled workers, and technicians and engineers. On the other hand, we are poor in capital and have low level of capital-formation. So, here main thrust of the policy should be to create employment on a continuous and large-scale. For this, industrial and agricultural development should be carried forward with the use of such technology which is labour-intensive, not capital-intensive. In this light, use of computers every-where has created unemployment, and also decreased the scope of employment. Therefore, computers should be used where there is the most emergent need of these like in the research-work, in military command and control, in guiding the space-vehicles, in mining, in oil-and-gas-exploration, in handling the sophisticated machines, and so on, and hence there should be a comprehensive review of the whole system of utilisationof computers and necessary steps should be taken up.

## IV. CONCLUSIONS

Natural sciences constitute the basis of all the applied sciences and these clear the path for the development of applied sciences. Development of applied sciences projectsproblems, which are solved by research in different areas of natural sciences. Both natural sciences and applied sciences develop simultaneously. Scientific discoveries and inventions provide facilities for the people, and create conditions for the mental transformation of the people. Natural sciences and applied sciencesare moving together to advance human-beings further.

Computer Science is one of the applied sciences which is helping the work in all fields. Internet is important achievement of this technology. The speed of computers is doubling each year. Area of Computer Graphics has been developed. There is development of Multimedia.

There are so many ill-effects of computer on human-health. CVS has been on the rise. Also there are bad effects on human-health in the form of headache, muscle- pain, joint-pain, neck-pain, and shoulder-pain. To tackle these, necessary steps should be taken.Electro-Magnetic-Radiations (EMR) emitted by all the electronic-devices have heating-effect and result in the production ofailments like cataracts, skin-rashes and miscarriages. To minimise this risk, low-emission monitors should be used.

The fragmented nature of information obtained by using computer-technology should be synthesised to have generalisations and to arrive at correct conclusions.

In our country, industrial and agricultural development should be carried forward with the use of such technology which is labour-intensive, not capital-intensive. Computers should be used where there is the most emergent need of these, not everywhere.There should be a comprehensive review of the whole system of utilisation of computers and necessary steps should be taken up.

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