

CHAPTER : VI
SUMMARY
&
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CHAPTER-VI :: SUMMARY AND CONCLUSIONS ::

6.1 SUMMARY

Popularly quoted assessment of computer and people goes like this : "Computers are fast, accurate and stupid. People are slow, inaccurate, and brilliant. Together they can perform incredible facts beyond the imagination". With the advent of artificial intelligence, computers have begun to enter the "brilliant" category. The A.I. research workers are making their best to introduce creativity in computer. "Drawing and painting" are the two basic fields involving creativity. So most of the research workers are concentrating on these aspects. This dissertation attempts to explore some subject areas in the field of computer art or computer graphics.

Chapter I explains some facts about creativity, graphics hardware and Turbo C graphics software. Artists and scientists rarely know how their original ideas come about. It is a common belief that, there will never be a scientific theory of creativity. Chapter I , tries to answer some of these questions related to creativity viz. what is creativity ? whether the computer will help in understanding the possibility of human creativity ? whether computer will be creative now or in future ? whether the computer could ever appear to recognize creativity and whether creative computer is possible without programmer ? The chapter also explains the need of creativity, threat of creative computer to human

being. Really, the computer art challenges our traditional beliefs about art, it is an art created by mind rather than body. Progress of computer graphics is closely associated with hardware development. An account of graphic adapters is taken in this chapter. Creating computerized illustrations and other images on a video screen and reproducing them on a printer has become an important application of personal computers. A brief survey of various printers, plotters and the recent graphic printing technology is also made. The entry of Silicon Graphics, has changed the complexion of the Indian workstation market. Chapter I also summarizes the dazzling products of the company and their applications. All the programs implemented in this work are developed in Turbo 'c'. Chapter I ends by taking the overview of turbo c graphics.

The basic purpose of II Chapter is to present some interesting, appealing, instructive geometrical shapes on the screen of the computer. This is a kind of regular art. The functions used for creating the geometrical shapes are circular functions. Linear spirals, concentric lobe patterns, contra spirals are implemented from the family of spirals. Simulation of amplitude modulation is also worked out in this chapter. The last geometrical pattern implemented is lissajous figures. Mathematical graphics can be applied at number of places in practise. Individual mathematical shapes can be used as motifs in the decorative techniques. It can also be used as a sophisticated tool for instruction and explorative education

in mathematics. Mathematics can also be used to model the growth of some natural patterns such as rosetts.

After regular art, there is a turn for irregular art. Nature appears to be irregular. There are two major tools to imitate natural patterns as recursive programming and fractal geometry.

Chapter III deals with such irregular art. Recursive square and Koch recursion is implemented in this chapter. An example of non-random fractals or space filling curve is Sierpinski curve. The program for drawing this curve at varying levels of detail is also worked out in this chapter. The fractal graphics has many applications in modelling mountains and coastlines which are defined as the objects having infinite length, nonrectifiable appearance, spanning space characteristics.

One of the most important uses for a personal computer is certainly in education. Because of the ability of the computer to perform calculations rapidly, they are well-suited to be used for educational and mathematical simulation. Moreover, introduction of graphics in the simulation gives better understanding of the concept to young learners. Such two education simulation packages are developed in Chapter IV. The first package effectively simulates a projectile while second package gives the graphical illustration of proportional control.

Basic interaction techniques is the subject of Chapter V. Rubber band drawing and picking and dragging techniques are implemented in this chapter. Rubber band drawing is applied to line drawing and box drawing. One can create line drawings with this package. By combining the rubber band box drawing and text commands available in this package, block diagrams can be constructed. Picking and dragging technique is applied to electronic circuit drawing. A circuit having components resistor, capacitors, inductor can be constructed on the screen with this package. Moreover this package illustrates iconic approach of package design.

6.2 CONCLUSIONS

This dissertation is an attempt to emphasize the point that the art in computer graphics is in both the program and the output. To judge the art, one should appreciate both the stories : Programs run and Picture Generated.

The computer art implemented in this work is an interactive (active) art. e.g. if you vary the parameters of programs in Chapter II then the output changes and one can gain insight about how picture and program structure interact. Moreover while experimentating with the geometrical patterns in chapter II, you will observe that one and the same pattern can be generated with two different programs which uses different equations. This is because of the fact that the functions are circular or harmonic.

Fractal graphics and recursive programming implemented in Chapter III illustrates that new art forms will arise through computer simulation using such techniques, different from conventional art and in this sense computer and conventional art are non comparable.

From the onscreen demonstration of the simulation of projectile one can conclude that the package correctly simulates the projectile (as the range is maximum at 45°) The package of proportional control is also valid since the controller output varies only within the range of proportional band.

The objective of Chapter V is synthesis rather than analysis. From the art illustrated in this dissertation, the overall conclusion is computer art is emerging which in Simon's terms can be truly called as science of artificial.

