

# Factual to Virtual Visualization

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**Abstract:** *The purpose of this study is to explore the formation of image output in computer system from the user input information. The study seeks to answer the research question How does the image displayed on the computer screen and how appearance of image changed? The goal is to analyze transformation of real world picture to computerized output image in a very simple method by explaining all major components involved in this process in detail with diagrams. Further by using some mathematical concepts algorithms are derived and implemented to transform the images to change their shapes, sizes etc As there is a very near context between computer science and mathematics. Systems works completely based on the algorithms written to perform the particular task, algorithms are designed based on the mathematical concepts and are implemented by the programming languages in computer.*

*Paper concentrates on the graphic capabilities and potentials of the digital computer. It presents an abstract idea of system that, how computer works internally to create and represent the simple graphical elements and images which human can see and understand. Paper presents all the components and related concepts with suitable examples from input information to graphical output produced by computer. After by getting the concept of image formation the next step is to know that how transformation of image takes place by changing original image. This paper illustrates four types of transformations with example translation, rotation, scaling, and shearing.*

*Paper explores about display devices, different types of display methods, programming tools and finally drawing of a simple line in computer screen using a simple line drawing algorithm. Further it elaborates the concept of pixels, resolution, aspect ratio, persistency, different types of transformations etc.,*

**Keywords:** Display devices(CRT), Resolution, Aspect ratio, Persistency, Gray scale display, Color display, Raster scan, Random scan, Drawing objects, Painting methods, Digital Differential Algorithm, transformations, scale, shear, rotation, translation.

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