

METHOD AND APPARATUS OF INPUTTING AND OUTPUTTING COLOR PICTURES  
AND CONTINUALLY-CHANGING TONE PICTURES

ABSTRACT

5           An apparatus for inputting, compressing, memorizing  
and regenerating continually-changing tone pictures or color  
pictures, which allows us to store the image data by a small amount  
of memory, to output the regenerating picture in a short time and  
to enlarge the picture in any size with keeping its quality. The  
apparatus proceeds the inputting steps of reading-in a  
10 continually-changing picture, dividing the picture into a plurality  
of regions of the pixels having similar tones within a width  $2W$ ,  
reckoning an average tone of every region, producing an  
average-tone picture by painting every region with the average  
tone, extracting boundaries dividing neighboring regions  
15 artificially, seeking branch points and turning points on the  
boundaries, approximating the coordinates  $(x,y)$  of subboundaries  
terminated at the branch points or the turning points by  
single-variable spline functions by the biorthonormal function  
method till the errors become smaller than a critical value,  
20 memorizing coefficients of the approximation functions as boundary  
data, making a differential image by subtracting the average-tone  
image from the input image, approximating the differential tone



image by two-variable spline functions by the biorthonormal method till the errors become smaller than a critical value, and memorizing the coefficients of the approximation functions. In the case of a color picture, the input picture is resolved into three or four primary color pictures.

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