Abstract

The detection of edges in images is a vital operation with applications in various fields. There are a number of methods developed already for the same. We have developed a 'global method' for extraction of edges which is a modification of the existing Sobel operator. We have first extracted the bit planes of each image and have applied the Sobel operator on each bit plane for enhanced results. After this we have recreated the image by adding up the edges of all the bit-planes in their order of importance. This is a fairly simple global method which yields very good results. The computations are simpler and faster as well. Pratt's figure of merit (FOM) has been used to quantify the measure of edges. The values of Peak Signal to Noise Ration (PSNR) and Mean Square Error (MSE) have been calculated to assess the performance of the new algorithm in comparison to the previous existent one in presence of additive Gaussian noise. The results favor our new algorithm clearly.

References

Modified Bit-Planes Sobel Operator: A New Approach to Edge Detection


Index Terms

Computer Science
Image Processing
Keywords

Edge Detection  Filtering  Segmentation  Sobel Operator.