A GRADIENT BASED MORPHOLOGICAL WATERSHED SEGMENTATION APPROACH SUITABLE FOR HUMAN VISUAL SYSTEM

PINAKI PRATIM ACHARJYA[1] & DIBYENDU GHOSHAL[2]

[1]Assistant Professor, Department of CSE, Bengal Institute of Technology and Management, Santiniketan, West Bengal, India

[2]Associate Professor, Department of ECE, National Institute of Technology, Agartala, Tripura, India

ABSTRACT

A 7x7 Laplacian and Gaussian (LOG) filter has been proposed following the structure and behavior of the human brain cells responsible for vision. The conventional 5x5 LOG filter, has been thoroughly modified in dimension and weight of each element to emulate the human visual system   (HVS) and this has been achieved by successive approximation method which has utilized the structure of the corresponding brain cells by a mask. The present study has shown that the watershed segmented images obtained by the 7x7 LOG mask appears to be much more clear with sharp and prominent watershed ridges; and the number of segments have been found to much less than those obtained through 5x5 LOG filter. Thus, the proposed method has been found to be able to reduce over segmentation and this would ultimately lead to easier handling by the machine towards higher level of processing at subsequent stages.

KEYWORDS: Image Segmentation, Morphological Gradients, Laplacian of Gaussian Filter, Watershed Algorithm