A

MAJOR REPORT

ON

FUZZY AND NON-FUZZY REGION GROWING TECHNIQUES FOR COLOR IMAGE SEGMENTATION

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CERTIFICATE

This is to certify that the MAJOR REPORT titled as "**FUZZY AND NON-FUZZY REGION GROWING TECHNIQUES FOR COLOR IMAGE SEGMENTATION**" is being submitted by PUNEET KUMAR JAIN Class roll no. 08/IS/09, in partial fulfillment for the award of "Master of Technology Degree in Information System" in Delhi Technological University, Delhi; is the original work carried out by him under the guidance and supervision. The matter contained in this report has not been submitted elsewhere for reward for any other degree.

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ABSTRACT

This thesis focuses on a specific branch of computer vision called image segmentation. The objective of image segmentation is to extract the semantic objects present in images either by dividing any given image into meaningful contiguous regions, or by extracting one or more important objects in images. In this master thesis a novel image segmentation algorithm based on region growing method is presented.

The proposed method starts with center pixel of the image. Method uses intensity based growing formula in which it first checks for similarity of pixel (to be label) with respect to connected pixel and with mean value of growing region. If it fulfills criteria then it includes the pixel in growing region. Otherwise it analyzes closeness of pixel with respect to its 8-neighbors and the mean value of growing region. If it is closer to growing region compared to its neighbors then it is included in growing region, otherwise it is labeled as boundary pixel. After one region is completely grown, next seed pixel is selected from the boundary pixel stack. The proposed algorithm have been applied to Berkley images with successful results and evaluation of segmented images has been done using Liu's F-factor, total number of regions segmented and time taken by algorithm. A fuzzy rule based modification of the algorithm is also proposed in which decision making steps is solved by fuzzy rule and basic flow of algorithm remain same. The proposed algorithm is also compared with method proposed by Chaobing Huang and another one proposed by Juliana Fernandes Camapum. On the basis of Liu's F-factor it can be said that the proposed algorithm's results are better as compared to both.

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