CERTIFICATE

This is to certify that Ms**. Shobha Tyagi (12/IS/09)** has carried out the major project titled **"Deblurring of Image using Optimal Fuzzy Systems"** as a partial requirement for the award of Master of Technology degree in Information Systems by Delhi Technological University.

The major project is a bonafide piece of work carried out and completed under my supervision and guidance during the academic session **2009-2011**. The matter contained in this report has not been submitted elsewhere for the award of any other degree.

(Project Guide)

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ABSTRACT

A fuzzy filter for the removal of Gaussian noise in color images is developed using cosine similarity. The filter makes use of the relationship between different color components of a pixel to remove the noise from the color images. Proposed filter uses the RGB color model; all the possible combinations of the three colors are paired as red-green, red-blue, and green-blue. For the removal of the noise, adaptive cosine similarity among the central pixel and the neighboring pixels is estimated using all the three color pairs. The minimum value of the similarity is extracted for each color pair from the values obtained in the process of similarity estimation for central pixel with that of the neighboring pixels. Membership function Large is used to fuzzify each color component. Weights for all the three color components are estimated with the help of the values of membership function. Finally, the correction term for the gaussian filter is calculated using weighted average of the weights of all the neighboring pixels. The proposed Gaussian filter is found to be effective in eliminating noise from color images with the significant improvement in image quality. The experimental result on several color images proves the efficacy of the proposed fuzzy filter.