Foggy Image Restoration Using Neural Network

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Abstract : Blurred vision in the misty atmosphere is essential problem which needs to be resolved. To solve this problem, we developed a technique to restore foggy degraded image from its original version using Back-propagation neural network (BP-NN). The suggested technique is based on mapping between foggy scene and its corresponding original scene. Seven different approaches are suggested based on type of features used in image restoration. Features are extracted from spatial and spatial-frequency domain (using DCT). Each of these approaches comes with its own BP-NN architecture depending on type and number of used features. The weight matrix resulted from training each BP-NN represents a fog filter. The performance of these filters are evaluated empirically (using PSNR), and perceptually. By comparing the performance of these filters, the effective features that suits BP-NN technique for restoring foggy images is recognized. This system proved its effectiveness and success in restoring moderate foggy images.

Keywords : artificial neural network, discrete cosine transform, feed forward neural network, foggy image restoration
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