Histogram Processing

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Histograms are the basics for numerous spatial domain processing techniques. Histogram manipulation can be used for image enhancement. In addition to providing useful image statistics, the information inherent in histograms also is useful in other image processing applications, such as image compression and segmentation.

Histogram equalization is a commonly used method to enhance contrast. Foggy images have low contrast and a narrow, centralized unimodal histogram. Therefore, it is possible to use histogram equalization to make histograms a balanced form of distribution and extended range to enhance contrast. Therefore, we could use the histogram equlization to do the image haze removal, but this methods also have some disadvantages. So Kim [1] proposed local histogram equalization. The basic idea is to define a sub-block of the image and the histogram of the sub-block is determained, therefore we can do the histogram equalization at the sub-block.

References

[1] Joung Youn Kim, Lee Sup Kim, and Seung Ho Hwang. An advanced contrast enhancement using partially overlapped sub-block histogram equalization. *IEEE Transactions on Circuits Systems for Video Technology*, 11(4):475–484, 2001.