Chapter 6

Conclusion

In this study, we have analyzed two related issues concerning scene illumination. First, we considered the classification of color temperature from a single image. We have introduced a modification of the correlation method for illuminant estimation. The original correlation method used reference gamuts defined in the chromaticity plane. The estimation performance is improved by a simple Gaussian model to have fewer parameters in hardware memory. The errors are within 500 K. The performance of our modified method is 63% when illuminant estimation error bellowed 24 mired. The precision of the algorithm was compared using experimental data obtained with a calibrated camera and real images of outdoor scenes.

Second, we have shown that once the illuminant color temperature is estimated it is possible to predict the camera outputs for the same objects viewed under a different illuminant color temperature. The color correction method is based on summarizing the ratio of R, G, and B sensor responses under different illuminants. Two ratios R/G and B/G are defined as a function of color temperature. The color correction can be performed in a simple way using the lookup table. When AWB performance is concerned, the proposed method is superior to Gray World method and close to Canon algorithm.

Future work

The proposed method could be highly potential to apply in a various natural scenes. In further investigation, we will attempt to study color rendering illuminated by artificial light sources. Subsequently, we will improve color probability model to increase the accuracy of illuminant estimation to 80%. For testing images, we can add more sample points rather than one mean value to increase the accuracy. For color probability model, we can verify color probability distribution with color temperature by multi-Gaussian. Therefore, the performance of Awb Algorithm can be further improved to utilize in digital still cameras.

Fig.6-1 Images under artificial an