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Probabilistic Color Constancy

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Specifying the frequency with which surface reflectance functions occur in the visual environment lets one use the chromaticities of reflected lights to provide maximum likelihood estimates of the spectral properties of a scene's illuminant. This approach to color constancy generalizes, in a natural way, schemes that use the gray-world assumption. Monte Carlo simulation suggests that a trichromatic visual system needs the chromaticities of reflected lights from a random sample of at least four surfaces to estimate accurately the correlated color temperature of daylight illumination.