

must encode the spatial distribution of features in an image. Third, the representation should be as compact as possible to provide efficient storage and retrieval of images. An additional consideration is that the selected representation should not involve excessive computation in order to keep the system efficient. As a result of these considerations, Color-Wise uses the HSI (Hue, Saturation, Intensity) color co-ordinate system, which correlates well with human color perception and is commonly used by artists¹, to represent color information present in images. In this representation, hue and saturation are the two parameters that contain the color information. The hue component of a color refers to its average spectral wavelength. The saturation component determines the amount of purity in the perceived color, for example the reddish-ness of a red object. The intensity component of HSI representation stands for brightness. Since digital images are normally available in the RGB (Red, Green, Blue) space, the HSI representation of an image is obtained from its RGB representation using the following relationships:

$$H = \begin{cases} \theta & G \geq B \\ 2\pi - \theta & G < B \end{cases}, \text{ where } \theta = \cos^{-1} \left[\frac{\frac{1}{2}[(R-G) + (R-B)]}{[(R-G)^2 + (R-B)(G-B)]^{1/2}} \right]$$

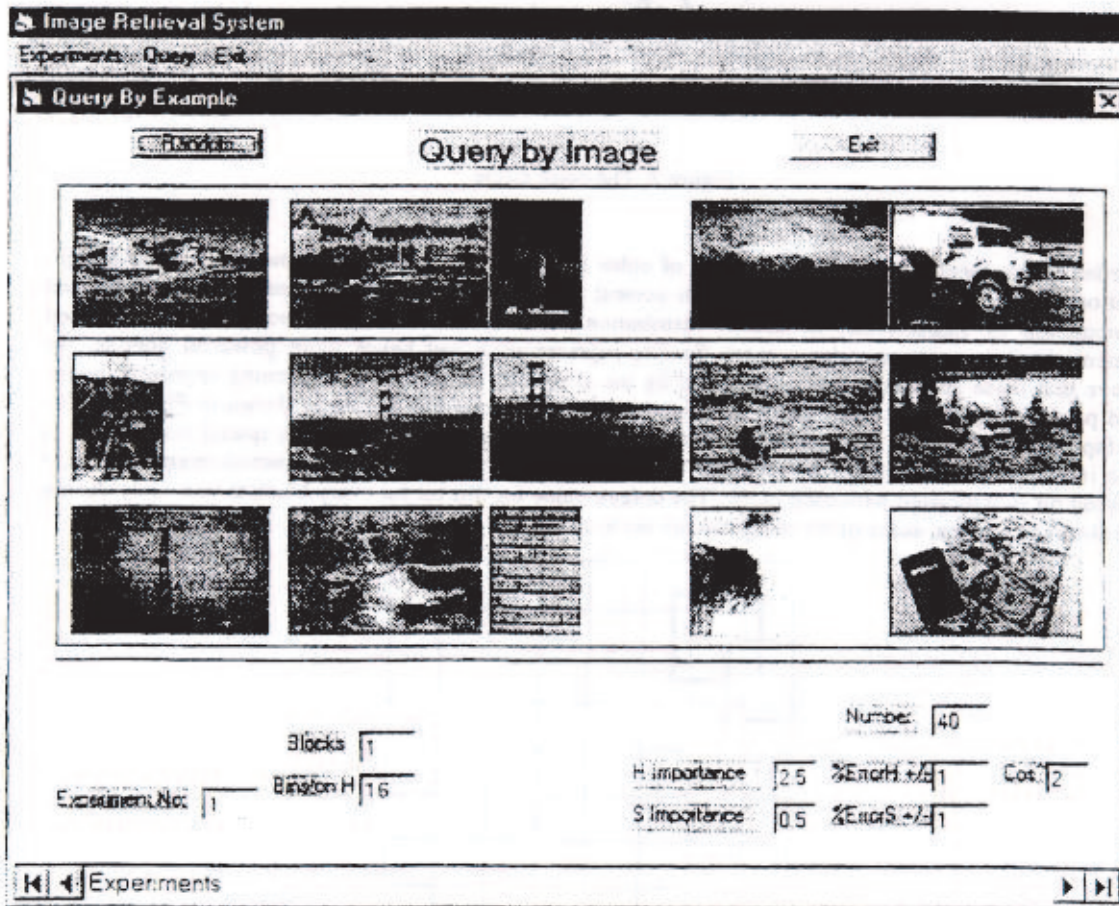


Figure 1: Color-WISE interface