

1 Introduction

Computer vision is a field concerned with using computers to process and analyze images. One of the most important things that human vision is able to do, is object recognition. This means that the brain is able to decipher basic information from the eyes, and deduce the objects that can be seen there. This is a complicated task, and not easily replicated programmatically.

1.1 Shape and Colour Analysis

One obvious way of analysing an image with a computer, is to break the image down into shapes and colours. In terms of language, it is easiest to depict an object by describing its shape and colour, i.e. "the red box" or "the green hand". This is conceptually simple to explain and understand, and thus is more intuitive to program. Most images are saved as raster images (e.g. PNG, BMP, GIF), which is a 2D array of colours that directly map to pixels on a screen. This is opposed to vector images that store the location and colour of geometric primitives (squares, circles, triangles). Vector images, rather than raster images, are directly easier to perform shape and colour analysis on. However, input devices such as webcams and scanners almost exclusively produce images in raster formats.

Regardless of format, methods of colour analysis are simple to implement programmatically. This is because colour is intrinsic to all methods of storing the data of an image. Shape analysis is less simple for raster images.

1.2 Feature Analysis

Some of the most successful computer vision libraries (such as SIFT [?]), consider the neuroscience of human vision. These results there have been used as inspiration for developing