Contour Detection for use with Quick Response Codes

Barney Cole

BSc Computer Science, barney.cole@student.reading.ac.uk

ABSTRACT

Computer Vision is a complex area since computers cannot examine a scene in the subjective way that a human can – they have no way of initially differentiating between the noise in an image its important features without complex algorithms to find useful "patterns". This absolutely applies to QR Code detection – an algorithm needs to be found that will be able to quickly and accurately extract a QR Code from a given image, even with some level of distortion. There are many different ways of detecting QR Codes and their constituent unique features, and this paper will detail as to why Contour Detection was chosen for this project.

Figure 1. An example input image with a QR Code in.

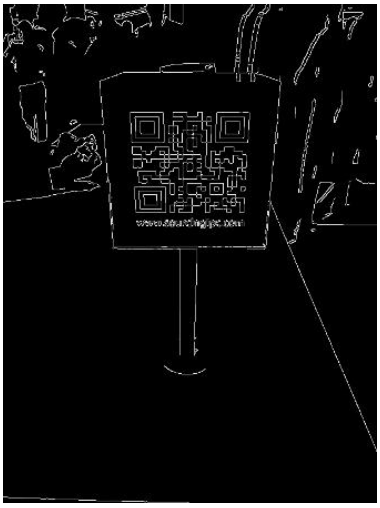

Figure 2. Canny Edges of Figure 1.

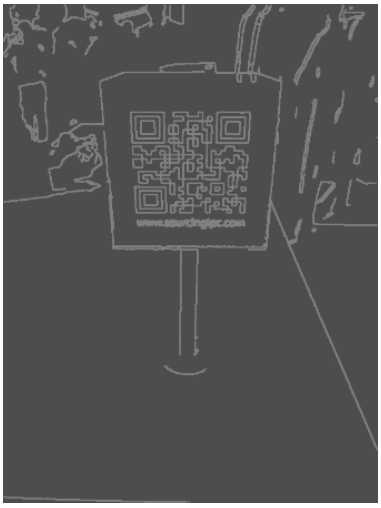

Figure 3. Detected contours of Figure 2.

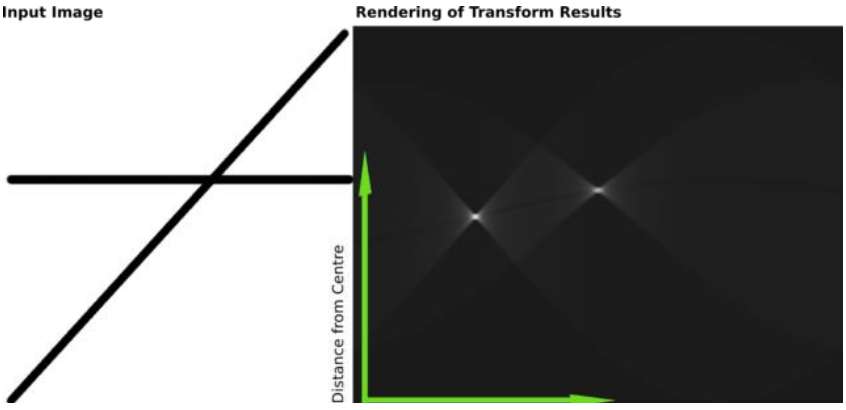

Figure 5. Example Hough Transform; the bright points in the right image are the Hough parameters of the two lines (the $(\boldsymbol{r}, \boldsymbol{\theta})$ that describes them).