Low Power Mid-crack Code for High Performance Image Transmission

Sohag Kabir[a,*], A S M Ashraful Alam[b]

[a] *Department of Computer Science, University of Hull, UK*
[b] *Department of Computer Science, University of Otago, New Zealand*

Abstract

Contour representation of binary object is increasingly used in image processing and pattern recognition. Chain code and crack code are efficient and widely used methods for representing rasterised binary objects and contours. However, by using these methods, an accurate estimate of geometric features like area and perimeter of objects are difficult to obtain. Mid-crack code, a third contour encoding method, has higher accuracy in estimating the geometric features of objects. Each element in the mid-crack code represents the relative angle difference between the mid-point of the edges of two adjacent pixels along the boundary of an object with a 3-bit code. Therefore, the frequencies of moves in different directions are not considered and binary bits that represent the codes are treated equally. A power efficient encoding of mid-crack code is possible by considering and applying a variable-length encoding technique that treats the binary bits differently considering their energy consumption requirements. In this paper, a low power mid-crack code is proposed based on a variation of the Huffman code. Experiments performed on different images yield that the proposed representation reduces the overall transmission cost of encoded objects considerably with compared to classical mid-crack code.

Keywords: Mid-crack code, Pattern Recognition, Huffman Code, Image Compression, Image Transmission

*Corresponding author. Tel: +447405024667
Email addresses: s.kabir@2012.hull.ac.uk (Sohag Kabir), aalam@cs.otago.ac.nz (A S M Ashraful Alam)

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