

1996 Paper 4 Question 10

Graphics

Describe a quad-tree encoding method for greyscale images. [6 marks]

Given the following greyscale image, draw a diagram showing how it would be encoded using your method from the previous part.

33	39	43	72
34	54	64	81
42	54	71	83
60	64	77	89

[4 marks]

An image processing package allows the user to design 3×3 convolution filters. Design 3×3 filters to perform the following tasks:

(a) blurring [2 marks]

(b) edge detection of vertical edges [2 marks]

Choose one of the two filters (a) or (b) from the previous part. Explain how it works, using the following image as an example (you may round off any calculated values to the nearest integer).

100	100	100	0	0	0
100	100	100	0	0	0
100	100	100	0	0	0
100	100	100	100	100	100
100	100	100	100	100	100
100	100	100	100	100	100

[6 marks]