2008 Paper 13 Question 5

Computer Graphics and Image Processing

(*a*) Assume that you have an algorithm that can fill 3D triangles with a constant colour. Explain what additional information and additions to the algorithm are required to Gouraud shade the triangles. [6 marks]

(*b*) Given the algorithm in (*a*), explain what additional information and additions to the algorithm are required to texture map the triangles using bilinear interpolation, including an explanation of how the bilinear interpolation is done. [6 marks]

(*c*) Explain the advantages and disadvantages of using nearest-neighbour interpolation compared with bilinear interpolation. [3 marks]

(*d*) Explain why a MIPmap would be useful for texture mapping and how one could be incorporated into the algorithm from (*b*). [5 marks]

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