Tampere University of Technology
Digital and Computer Systems Laboratory
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Exam - 8402065 Computer Graphics

Friday, March 2, 2001

1. Explain the concept of homogeneous coordinates and give an example for the 2- and the 3-dimensional cases, respectively! Why are homogeneous coordinates needed and what are their advantages and disadvantages?

2. What is a geometrical transform? Describe several types of geometrical transforms in detail! Provide the mathematical expressions for these transforms!

3. Describe at least 3 different color models and explain where they are applied? Explain the principle of the color printing! Discuss the terms "color gamut", "dot gain", and "color management".

4. Given a triangle with vertices A(0,0), B(0,1), C(1,0). Calculate the result of the rotation of this triangle by 60 degree with rotation center R(4,3). Please perform and show the calculation step by step in homogeneous coordinates. Draw a small figure in the plane to illustrate and control your calculation!

5. Explain the fundamental concepts and different types of perspective in computer graphics!