Graphics 2 - revision

Aims and learning outcomes
Assessment
Format of the written examination

Revision topics

Format of the written examination

- 1.5 hours
- Compulsory part
  - Terminology / understanding of concepts (3-4%)
  - Short practical questions (5-15%)
- Choose one option out of two
  - A problem solving question (around 30%)
- Appendix with basic definitions

On completion of this module, you should be able to

- Design wire-frame representations of 3-dimensional objects
- Define matrices for 3-dimensional transformations
- Explain and design algorithms for viewing and projection of 3-dimensional objects using transformation matrices
- Apply the relevant concepts of linear algebra and geometry to the design of computer graphics algorithms (e.g. vector and matrix operations and trigonometry)
- Explain and design basic raster conversion algorithms
- Explain image representations and colour models

Learning outcomes

- Design wire-frame representations of 3-dimensional objects
- Material in
  - Defining objects
  - Surface representations
  - Splines
- See also:
  - Homework exercises in unit 'Defining objects'
  - Class exercise "Big N"

Learning outcomes

- Define matrices for 3-dimensional transformations
- Material in
  - Elementary 3D transformations: a Graphics Engine
  - Composite transformations
  - Viewing transformations
  - Animation
- See also:
  - Class exercise "Big N"
  - Composite 2D transformations. Problem and step-by-step solution.

Learning outcomes

- Explain and design algorithms for viewing and projection of 3-dimensional objects using transformation matrices
- Material in
  - Virtual camera
  - Composite transformations
  - Viewing transformations
  - Animation
  - Hidden surface removal
- See also:
  - Class exercise "Big N"
  - Animation competition
  - Hidden surface removal
  - Illumination and surface shading

Learning outcomes

- Apply the relevant concepts of linear algebra and geometry to the design of computer graphics algorithms (e.g. vector and matrix operations and trigonometry)
- Material in most units
- See in particular the following web resources:
  - Exercise: Matrix and vector arithmetics
  - Basics of matrix and vector arithmetics

Learning outcomes

- Explain and design basic raster conversion algorithms
- Material in
  - Splines
  - Raster conversion algorithms for line and circle
  - Texture mapping
  - Scan-line area fill
  - Hidden surface removal
- See also:
  - Example of computing a spline curve: step-by-step solution.

Learning outcomes

- Explain image representations and colour models
- Material in
  - Colour
  - Illumination and shading

Other points

- Web material for computer graphics is at http://www.cs.bham.ac.uk/~exc/Teaching/Graphics/
- There may be a question drawn from the module 'Overview of advanced techniques'
- Revise the Homework exercises
- Study the "Problems and exercises" and "Additional learning materials" given on the course web pages
- Look at the past exam papers

Office hours

- I am available during the following office hours:
  - 30 April 9:30 – 10:30
  - 1 May 11:00 – 12:00
  - 8 May 11:00 – 12:00
  - 15 May 11:00 – 12:00
  - 16 May 9:30 – 10:30

Good luck!