

Syllabus and directions for the final exam

The material includes almost all the subjects discussed in class, since the discussion about z-buffer algorithm for finding occlusions between objects.

1. Accumulation buffer.
2. lighting
 - (a) Ambient reflection
 - (b) Diffuse reflection
 - (c) Specular reflection
3. Lighting and shading
 - (a) Flat Shading (Constant intensity shading)
 - (b) Gouraud shading (interpolate between shading in vertices)
 - (c) Phong shading
4. ray tracing
 - (a) Scan line method
 - (b) Two pass object precision algorithm. The Z-buffer method.
 - (c) Ray tracing
 - (d) Recursive ray tracing. Tree evaluation.
 - (e) Volume rendering.
5. Data Structure
 - (a) boundary representation

- (b) Winged edge representation
- (c) Boolean operations
- (d) Spatial decomposition
- (e) quad tree and oak trees.
- (f) Boolean operations on oak trees
- (g) Binary space partition (BSP) (including the material spread in class)
 - i. definitions
 - ii. searching in a BSP: Point location and ray tracing.
 - iii. construction of a BSP.
 - iv. size of a BSP (worst case vs. average size)
- (h) Newtonian particles

6. Radiosity

- (a) Definitions
- (b) obtaining a system of equations (though not necessarily knowing how to solve them)
- (c) iterative methods

7. Parametric representation of curves and Hermite curves

- (a) definition of G_1 and C_1 continuity
- (b) definition of Hermite curves
- (c) computing of Hermite curves