

CMSI 671
C O M P U T E R G R A P H I C S
Spring 2005

Midterm Review Sheet

The following bullets summarize the material that we have covered thus far, and the “skill set” that you will need in order to do well on the February 22 midterm. The midterm is open-book, so the focus will be on applications and deep conceptual understanding.

- Be aware of the parts of a graphics system; the assorted layers, their roles, and how these general roles map to specific APIs such as OpenGL, Java2D, and Java3D. This knowledge also covers how bridge APIs such as JOGL work from a programming perspective.
- Know the generalized structure of an interactive graphics program; be familiar with the model-view-controller paradigm, and how these ideas map to OpenGL, Java2D, and Java3D.
- Be familiar with how color is modeled, particularly the RGB and CMYK systems.
- Be familiar with graphics at a lower level: how they are represented in memory, and how graphics specifications (resolution, depth) translate into memory requirements. In particular, you should be able to make various calculations back and forth from graphics specifications, memory limitations, aspect ratio, among others.
- Be aware of the low-level ways for representing graphics (direct, indexed) and how these mechanisms translate into memory usage.
- Be familiar with graphics animation techniques: the different approaches, what they can or can't do, and any relevant implementation details.
- Be aware of how the low-level representation of color allows for simple image processing techniques, and have an idea of how to perform certain filters given a description of how one color may get transformed into another.
- Be familiar with the generalized model for 3D viewing: terms, concepts, definitions.
- You should have a certain comfort level with points, vectors, and planes at this point. Be familiar with their most common mathematical operations (dot product, cross product). Simple proofs based on straightforward manipulation of definitions is fair game.
- Finally, you should also have some comfort at this point with transforms, how they can be represented as matrices, and how these matrices can be multiplied to achieve transform composition. You should also know how to express transforms in matrix form, given a sufficiently precise definition of that transform.

Overall, we are covering Angel Chapters 1–4, with some of Chapter 5 (approximately 5.1–5.5) and background material from Appendices B and C.