CS6500 高等計算機圖學 (Advanced Computer Graphics)
Spring 2003
Classroom: 資電館 Room 129
Time: Tuesday 1:10 pm – 3:00 pm and Thursday 2:10 pm – 3:00 pm

Instructor: 張鈞法 (Chun-Fa Chang)
Office Hours: Appointment by email.
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Textbooks: Paper Collection.

References:
1. SIGGRAPH Proceedings (available online at ACM Digital Library).
2. SIGGRAPH 2001 Course Notes #24 “Real-time Shading”
3. SIGGRAPH 2001 Course Notes #43 “Performance Optimization for 3D Graphics”

Grading: Assignments: 30%, Paper Presentation: 30%, Project: 30%, Class Participation: 10%

Workload (subject to change):
1. Programming Assignments: There will be two or three: the first one is an OpenGL exercise and the second one is to render a large model as fast as possible. Don’t worry about its complexity. Examples or pseudo codes will be available to make them easier and enjoyable to you.
2. Written Assignments: exercises such as the computation of Z-Buffer values and other interesting topics.
3. Paper Presentation: You are expected to study a technical paper thoroughly and present its ideas to the class.
4. Project: The class will be divided into teams of 2-3 persons, with each team working on a different project. At the 9th week, each team should finish the proposal. At the 13th week, each team will present the current progress. Before the end of semester, each team will present its results and demonstrate the finished product.

Topics and Schedule: (subject to change)
- Week 1: OpenGL Intro
- Week 2: The Mystic Z Values
- Week 3: Anti-aliasing and Sampling Theorem
- Week 4: Texture Mapping
- Week 5: Bump Mapping & Environment Mapping
- Week 6: Shadow
- Week 7: Space Partitioning
- Week 8: View Frustum Culling -- Cells & Portals
- Week 9: Occlusion Culling
- Week 10: Programmable Graphics Hardware
- Week 11: Introduction to Ray Tracing and Monte Carlo path tracing
- Paper Presentations (4-5 weeks)
- Project Progress Reports and Demos (2 week)