

CS5502 數位影像合成(Digital Image Synthesis)

Fall 2006

<http://www.cs.nthu.edu.tw/~chunfa/cs5502>

Classroom: 資電館 Room 434 128 (changed!)

Time: M5M6R6 (Monday 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.

Office: 資電館 Room 642

Phone: (03) 574-2962

Email: chunfa@cs.nthu.edu.tw

Textbooks: **Physically Based Rendering, by Matt Pharr and Greg Humphreys. (on reserve at NTHU library).**

References:

1. SIGGRAPH Proceedings (available online at ACM Digital Library).
2. 3D Computer Graphics (3rd Edition), by Alan Watt.
3. Advanced Techniques in Computer Graphics and Animation, by Alan Watt & Mark Watt.
4. An Introduction to Ray Tracing, by Andrew Glassner (**on reserve at NTHU library**).

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 a ray tracer and the second one is either a radiosity program or a Monte Carlo path tracer. **Don't worry about its complexity.** Examples or pseudo codes are available to make them easier and enjoyable to you.
2. **Paper Presentation**: You are expected to study a technical paper thoroughly and present its key ideas to the class.
3. **Project**: The class will be divided into teams of 2-3 persons, with each team working on a different project. **At the 8th week**, each team should finish the proposal. **At the 12th 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:

- Overview and Introduction (1 week)
- Ray Tracing and Reflection Models (2 weeks)
- Antialiasing (1 week)
- RenderMan and Pixel Shaders (1 week)
- Radiosity (1 week)
- Monte Carlo Path Tracing (1-2 weeks)
- Precomputed Light Transport (1 week)
- Texture Mapping and Projective Geometry (1 week)
- Image-Based Rendering (1 week)
- Paper Presentations and Project Demos (5-6 weeks)