

CS3241

Computer Graphics

Semester 1, 2019/2020

Lecture 0

Module Info

School of Computing
National University of Singapore

Lecturer

■ Dr. Low Kok Lim

- Senior Lecturer, Dept. of CS
- Email: lowkl@comp.nus.edu.sg
- Web: www.comp.nus.edu.sg/~lowkl
- Office: AS6-04-09



Module Objectives

- Broad introduction to Computer Graphics
 - Software
 - Hardware
 - Applications
- Focus on real-time interactive 3D computer graphics
 - Raster graphics
- Use OpenGL API
- After the course, students are expected to understand basic computer graphics terminology and concepts, and be able to design and implement simple 2D and 3D interactive computer graphics related programs

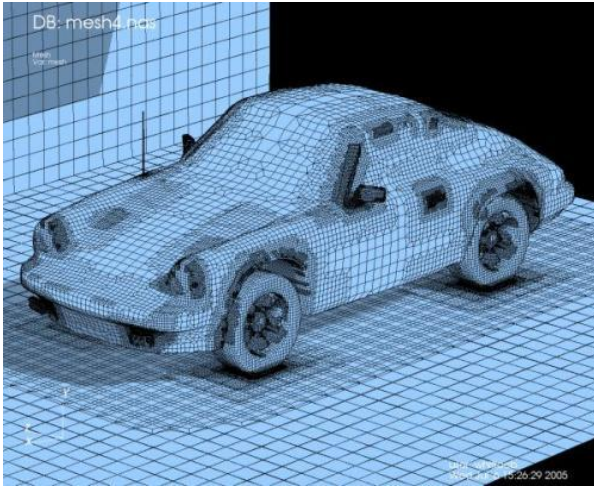
Applications



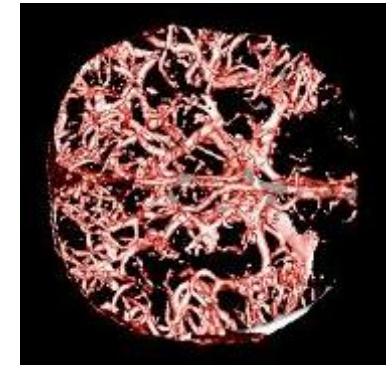
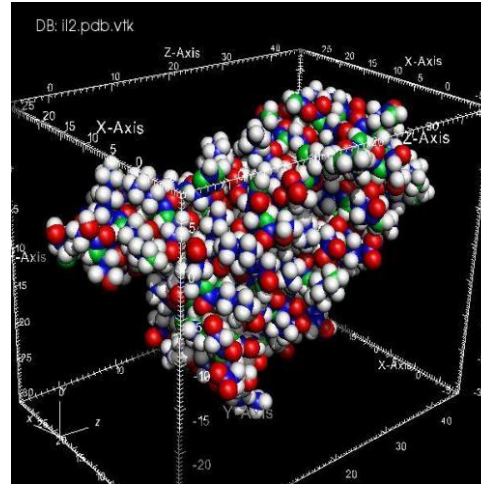
Real-Time Graphics in 3D Games

Applications

3D design



Scientific/medical data visualization



Movies / TV shows

Syllabus (Tentative)

- Introduction
- Elementary OpenGL Programming
- Input and Interaction
- Geometric Objects & Transformations
- Camera & Viewing
- Clipping, Rasterization & Hidden-Surface Removal
- Illumination & Shading
- Parametric Curves and Surfaces
- Texture Mapping
- Basic Ray Tracing
- Misc. Topics

Pre-requisites

- CS2010 / CS2020 / CS2040 & CS2030
- C / C++
- Basic Data Structures
 - E.g. arrays, linked lists, trees
- Basic Vector Operations
 - E.g. dot product, cross product
- Simple Linear Algebra
 - E.g. matrix multiplication, matrix transpose
- Basic Trigonometry
- Basic Calculus concepts
- Interested in computer graphics



Assessments

- Lab Assignments: 20%
- Tutorial Attendance: 6%
- Tutorial Participation: 4%
- Midterm Test: 30%
- Final Exam: 40%
 - Final exam and midterm test are open-book
- Plagiarism is a serious offense

Schedule

■ Lectures

- Every **Friday 2pm-4pm**, in **LT19** (Webcast recorded)

■ Tutorial Sessions

- Every **Monday or Tuesday** (start in Week 3),
2 hours, in **Media Lab 1 (AS6-04-21)**

■ Midterm Test

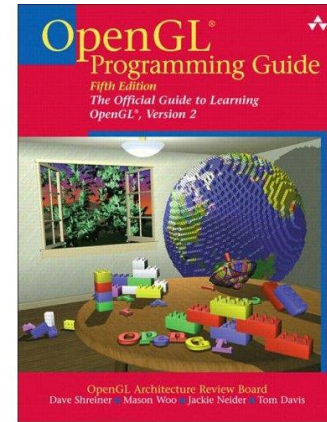
- **Week 8, 11-Oct-2019, Friday, 2pm-4pm**, in **LT19**

■ Final Exam

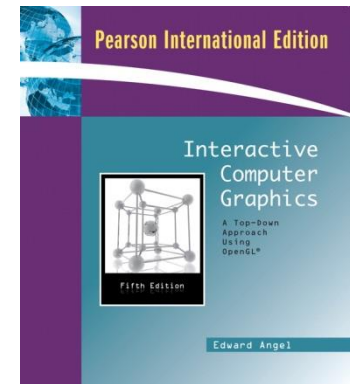
- **02-Dec-2019, Monday, 1pm-3pm**, venue **TBA**

Reference Books

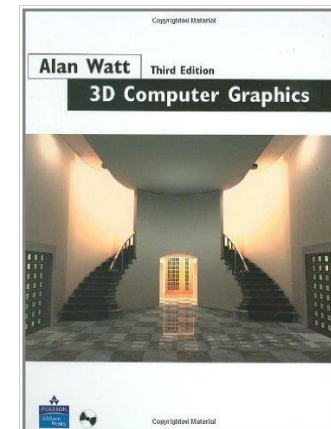
- The OpenGL Programming Guide (The Redbook), Addison-Wesley
 - 2nd Edition is freely available online at <http://www.glprogramming.com/red/>



- Interactive Computer Graphics: A Top-Down Approach Using OpenGL, 5th Edition
 - by Edward Angel



- 3D Computer Graphics, 3rd Edition
 - by Alan Watt



End of Module Info