CS3241
Computer Graphics

Semester 1, 2019/2020

Lecture 0

Module Info

School *of* Computing
National University *of* Singapore

Lecturer

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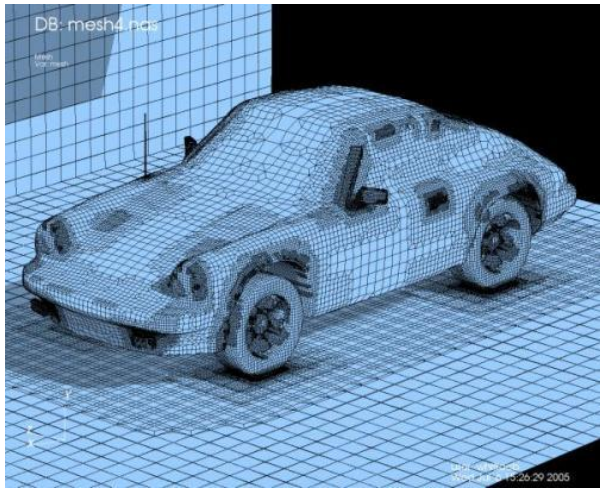
Module Objectives

- 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

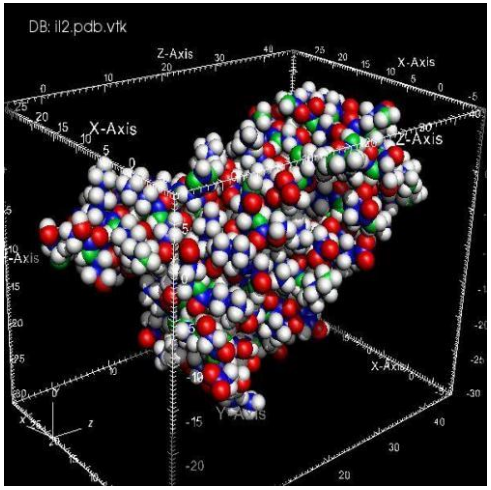
Applications

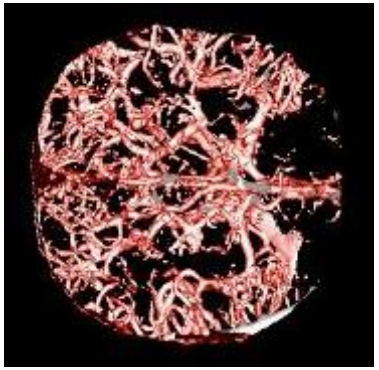
Applications

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
- Texture Mapping
- Parametric Curves and Surfaces
- 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**: 25%
- **Tutorial Attendance**: 5%
- **Midterm Test**: 30%
- **Final Exam**: 40%
  - Final exam and midterm test are **open-book**

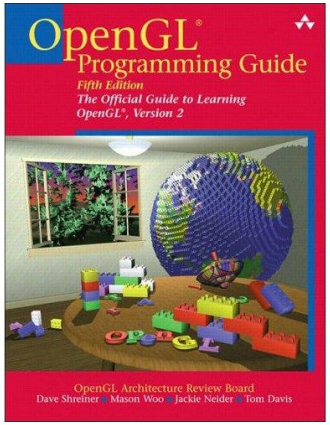
- **Plagiarism** is a serious offense

Schedule

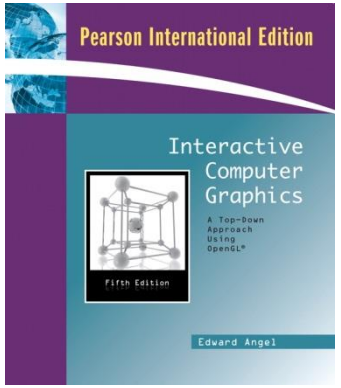
- Lectures
  - Every **Friday 2pm-4pm**, in **LT19** (Webcast recorded)
- Tutorial Sessions
  - Every **Monday** or **Tuesday** (start in Week 3), 2 hours, in **Media Lab 1** (AS6-04-21)
- Midterm Test
  - Week 7, **4-Oct-2019, Friday, 2pm-4pm**, venue TBA
- Final Exam
  - **02-Dec-2019, Monday, 1pm-3pm**, venue TBA

Reference Books

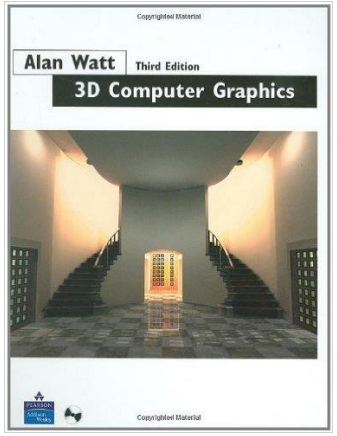
- The OpenGL Programming Guide (The Redbook), Addison-Wesley
  - 2nd Edition is freely available online at http://www.glprogramming.com/red/



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



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



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