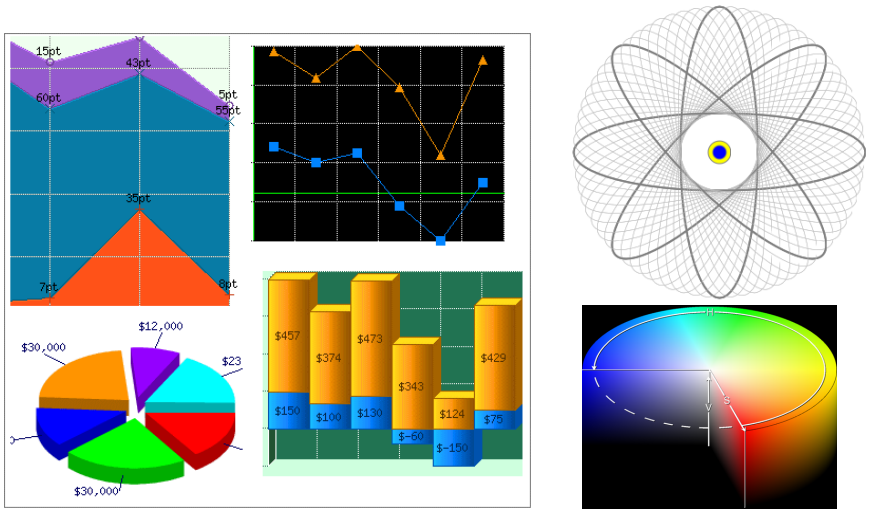
Komputer Grafik I

Teknik Informatika



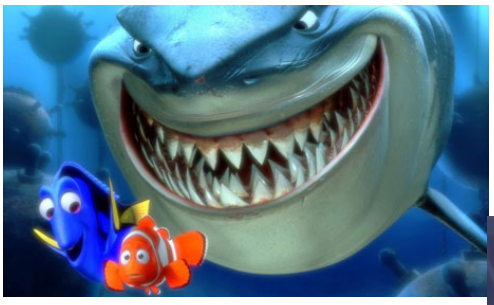
Apa itu Komputer Grafik?

- **Komputer grafik (grafika komputer):**

  Proses pembuatan, manipulasi, penampilan grafik (2D/3D), citra, animasi dan sejenisnya ke display, layar komputer, printer, maupun devais lainnya.

  Kenapa harus belajar komputer grafik?

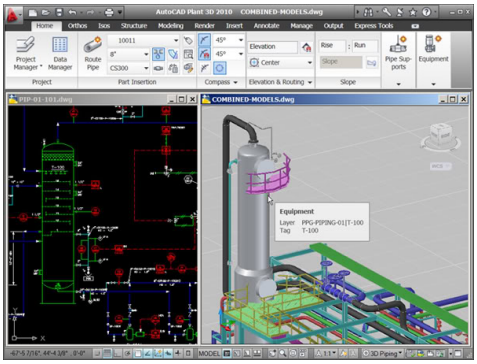
Entertainment

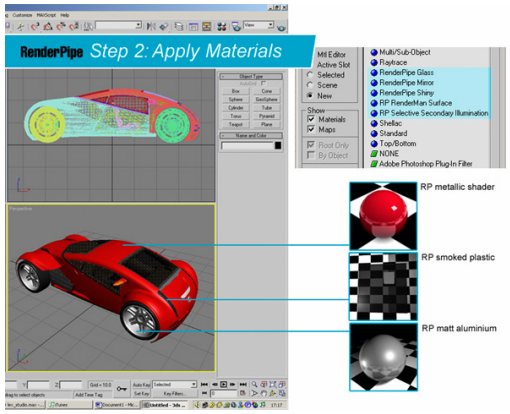


Film:
Finding Nemo
Pixar

Game:
Final Fantasy
Square Enix

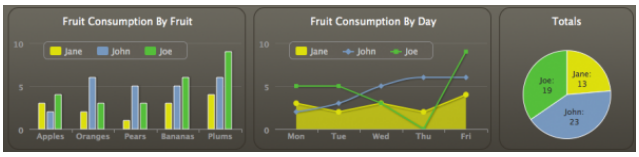
CAD: Computer-Aided Design

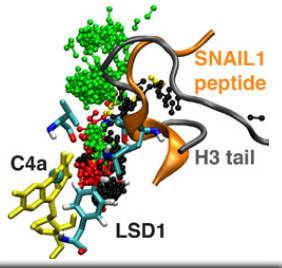


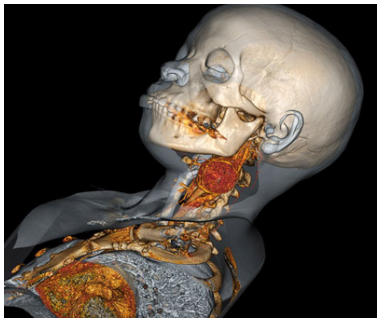


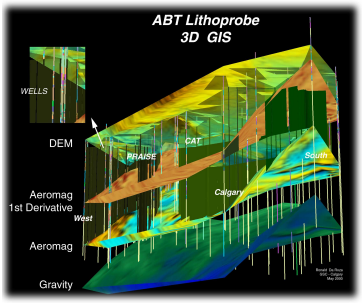
AutoCAD

Visualisasi: Teknik, Kesehatan, dsb









Simulasi & Virtual Reality

Brain-computer Interface & VR

Flight Simulator

User Interface

Dan masih banyak lagi contoh-contoh lainnya ...

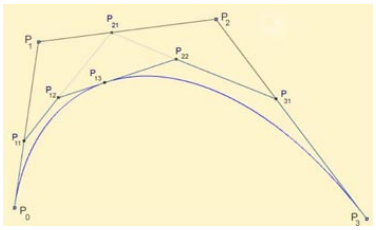
Kemajuan Teknologi: Input & Display

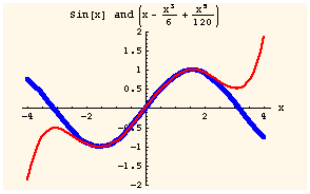
Perkembangan perangkat keras ...

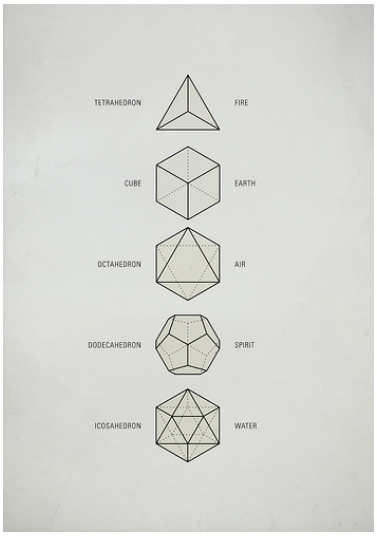
Teori dan Teknologi Pendukung

- Sains dan Matematika
  - Teori fisika mengenai cahaya, warna, dsb
  - Ilmu geometri
  - Matematika mengenai garis, kurva, bidang, dsb
- Teknik
  - Perangkat keras: Video card, Display, Sensor, Kamera, dll
  - Perangkat lunak: Grafik library (DirectX, OpenGL), UI Framework, Pemrograman
- Seni dan Psikologi
  - Persepsi: warna, tampilan
  - Desain: komposisi, warna, pencahayaan, dsb

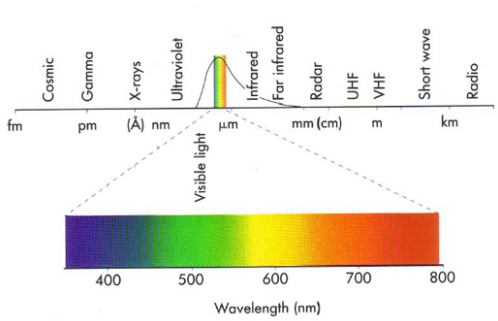
Matematika

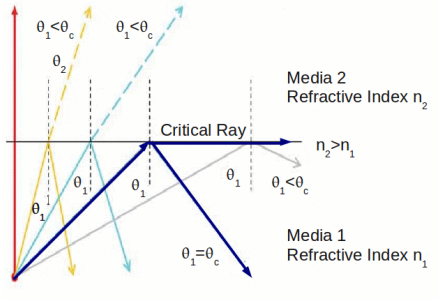




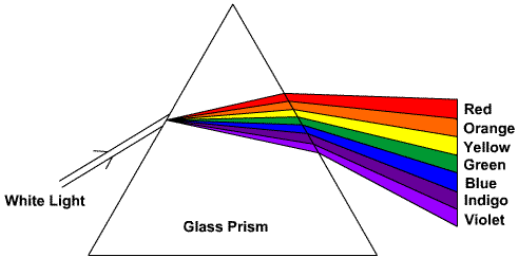


Warna dan Cahaya

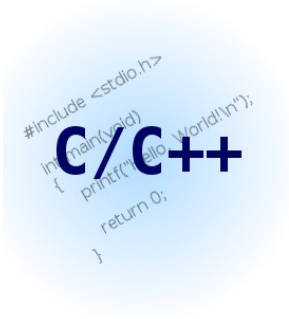




Komponen cahaya



Bahasa Pemrograman & Library



Tata Tertib, Penilaian dan Prasyarat

- Mahasiswa wajib mentaati tata tertib/aturan yang ditetapkan oleh prodi, khususnya:
  - Kehadiran (> 60 %)
  - Absensi & Keterlambatan
  - Perangkat komunikasi di-*silent*
- Penilaian
  - Absensi, Tugas, UTS, dan UAS
- Prasyarat
  - Matematika: Aljabar Linear, Geometri
  - Pemrograman: Algoritma & Pemrograman, Pemrograman Berorientasi Objek, Java

Materi

- Apa yang akan dipelajari?
  - Bukan mendesain (ini ranah desain grafis)
  - Bukan menggunakan software (Blender, Maya, dll)
  - Mempelajari prinsip dasar dari komputer grafik
    - Agar memahami bagaimana suatu objek CG dihasilkan
    - Matematika, pemrograman, algoritma
- Materi Perkuliahan
  - Komputer grafik 1: Grafik 2D (objek geometri, warna, transformasi, *clipping*, text, pemrosesan citra, animasi)
  - Komputer grafik 2: Grafik 3D (objek 3D, view, lighting, texturing, surface, rendering, interaksi, animasi)

Referensi

- Pat Hanrahan, “Introductory Computer Graphics”, https://graphics.stanford.edu/courses/#cs148
- ___, “The Java Tutorials”, http://download.oracle.com/javase/tutorial/
- ___, ”Trail: 2D Graphics (The Java Tutorial)”, http://download.oracle.com/javase/tutorial/2d/index.html
- ___, “Java 3D API Tutorial”, http://java.sun.com/developer/onlineTraining/java3d/
- Hong Zang dan Y. Daniel Liang, ”Computer Graphics using Java 2D and 3D”, Prentice Hall 2006