

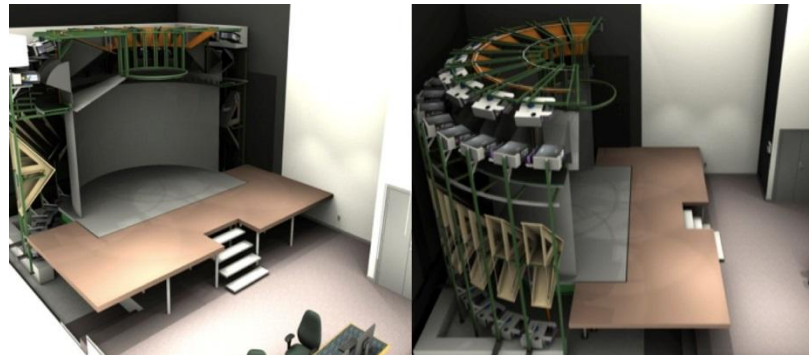
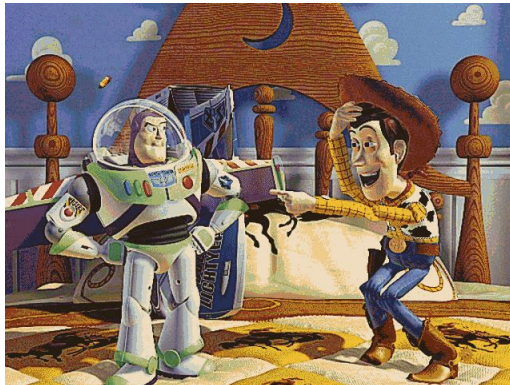
# CSE- 4105



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# Computer Graphics

- Computer graphics generally means creation, storage and manipulation of models and images
- Such models come from diverse and expanding set of fields including physical, biological, mathematical, artistic, and conceptual/abstract structures



# Computer Graphics

- Creation, Manipulation, and Storage of geometric objects (modeling) and their images (rendering)
- Display those images on screens or hardcopy devices
- Image processing





# What drives computer graphics?

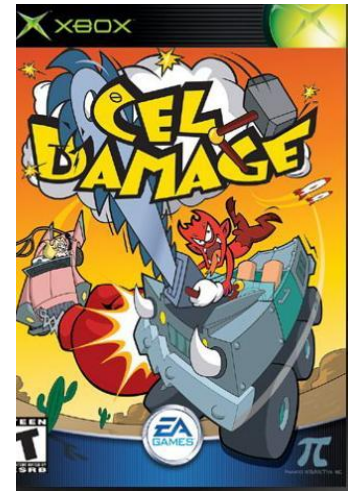
- Movie Industry

- Leaders in quality and artistry
- Not slaves to conceptual purity
- Big budgets and tight schedules



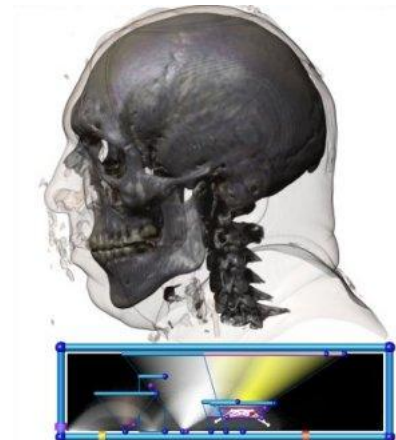
# What drives computer graphics?

- Game Industry
  - The newest driving force in CG
    - Why? Volume and Profit
    - This is why we have commodity GPUs
  - Focus on interactivity
  - Cost effective solutions
  - Avoiding computating and other tricks
  - Games drive the baseline



# What drives computer graphics?

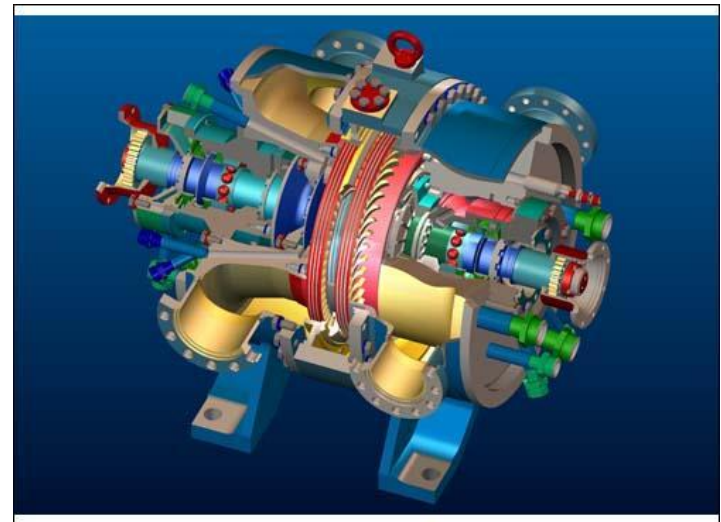
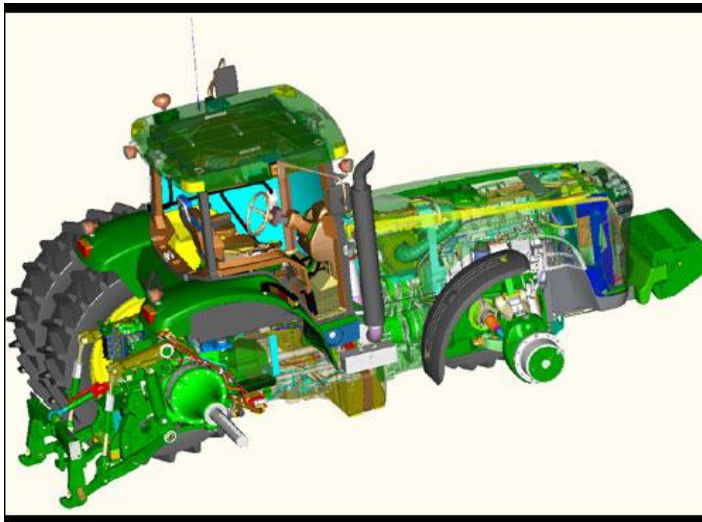
- Medical Imaging and Scientific Visualization
  - Tools for teaching and diagnosis
    - No cheating or tricks allowed
  - New data representations and modalities
  - Drive issues of precision and correctness
  - Focus on presentation and interpretation
  - Construction of models from acquired data





# What drives computer graphics?

- Computer Aided Design
  - Mechanical, Electronic, Architecture,...
  - Drives the high end of the hardware market
  - Integration of computing and display resources
  - Reduced design cycles == faster systems, sooner



# Applications

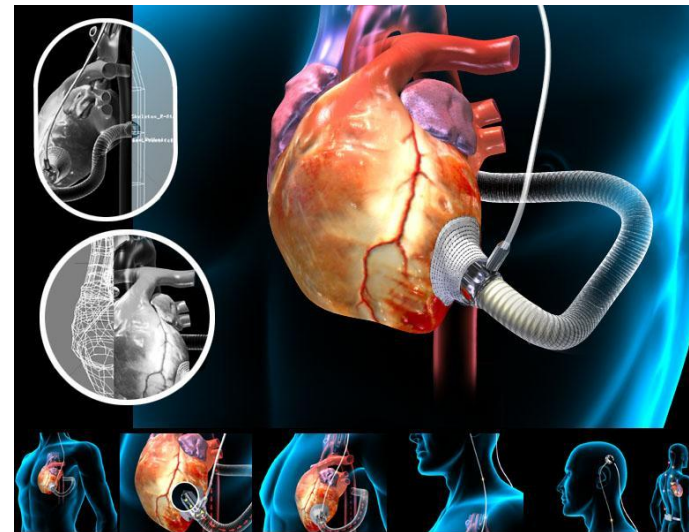
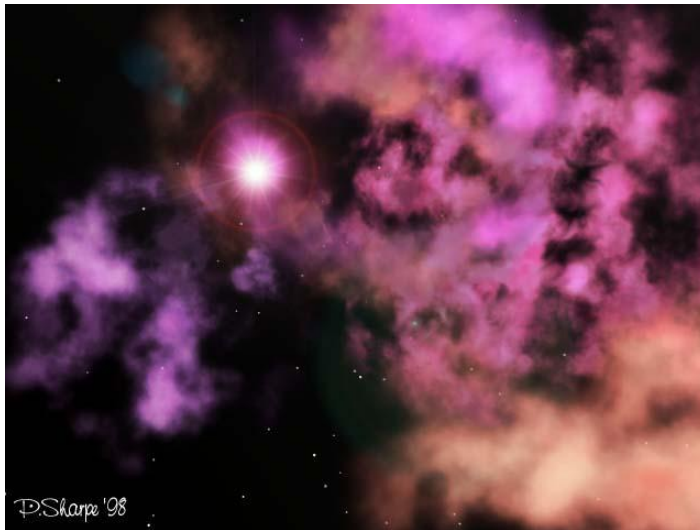
- Display of Information
- Design
- Simulation
- Computer Art
- Entertainment





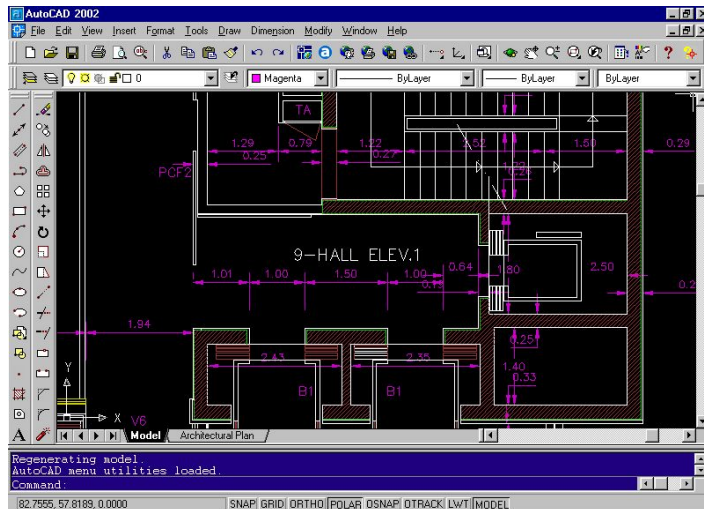
# Display of Information

- Graphics for Scientific, Engineering, and Medical Data



# Design

- Graphics for Engineering and Architectural System
- Design of Building, Automobile, Aircraft, Machine etc.



# Simulation

- Computer-Generated Models of Physical, Financial and Economic Systems for Educational Aids



# Computer Art

- Graphics for Artist





# Entertainment

- Graphics for Movie, Game, VR etc.



# Interactive Computer Graphics

- User controls content, structure, and appearance of objects and their displayed images via rapid visual feedback
- Basic components of an interactive graphics system
  - input (e.g., mouse, tablet and stylus, multi-touch...)
  - processing (and storage)
  - display/output (e.g., screen, paper-based printer, video recorder...)



# Enabling Modern Computer Graphics



Xbox Kinect



Leap Motion



Nimble UX

# Enabling Modern Computer Graphics



**Apple iPhone**



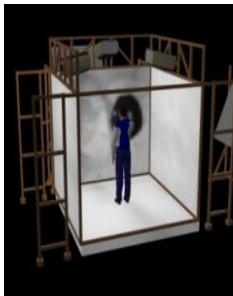
**Samsung  
Galaxy S5**



**Samsung  
Galaxy Tab**



**Android Wear**



**Brown's old Cave**



**Microsoft's first  
Surface**



**Microsoft PPI display**



**Google Glass**



**Oculus Rift**



**Google Cardboard**





Thank You