

Computer Graphics

Lecture-1

(Introduction to Computer Graphics)



What is Computer Graphics?!

- It is a branch of computer science that deals with theory and technology for computerized image synthesis.
- Typically, the term computer graphics refers to several different things:
 - ✓ Representation and manipulation of image data by a computer
 - ✓ Various technologies used to create and manipulate images
 - ✓ Sub-field of computer science which studies methods for digitally synthesizing and manipulating visual content.

Application of Computer Graphics

- Computer Aided Design (CAD) for engineering systems, architectural systems etc.

- Presentation Graphics

- ✓ To produce illustrations which summarize various kinds of data.

- Computer Art

- Entertainment

- ✓ Motion pictures, Music videos, and TV shows

- ✓ Computer games

- Education and Training.

- ✓ Training with computer-generated models e.g. flight simulation

- Visualization.

- ✓ For analyzing scientific, engineering, medical and business data or behavior.

- Image Processing

- Graphical User Interface.

What is Computer vision?

- Computer vision is the science that aims to give machines or computers human like vision capability.
- It is concerned with the automatic extraction, analysis and understanding of useful information from a single image or a sequence of images.
- It involves the development of a theoretical and algorithmic basis to achieve automatic visual understanding.

Application of Computer vision

- Biometrics
- Remote sensing
- Augmented reality
- Robotics
- Autonomous vehicles Security and surveillance
- Face recognition
- Character recognition

Computer Graphics vs. Computer Vision

Computer Graphics	Computer Vision
Falls into category of <u>Computer generated contents</u>	Concerned with the <u>interpretation of video or images</u>
Tools and mechanism to synthesize videos and images	Analyze and pull semantic contents from videos and images
Example : 3D animated movies	Example : Locating and identifying faces from random images

Computer human Interaction (CHI)

- The study of how people interact with computers.
- Promotes effective communication between man and machine.
- Graphical User Interface uses both the fields of Computer graphics and CHI
- The key is to design interactive protocol that makes user-friendly, intuitive, efficient use of devices and graphics.
- Physical devices (mouse, keyboard) are used to convey information to the users in different graphical form.
 - ✓A mouse can be used to specify locations in the image space. Cursor gives the visual feedback.
 - ✓A mouse can also be used to select an item.

Applications of Computer human Interaction (CHI)

- User customization
- Embedded computation
- Augmented reality
- Social computing
- Knowledge-driven human-computer interaction

Book Reference

- Chapter 1, Computer Graphics (Second Edition), Schaum's outlines.

If you have any query, please contact me at
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