CSE 100: Computer Skills

Lecture 10: Multimedia

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Introduction

- Multimedia programs are interactive and innovative composition of different media including text, audio, video, graphics and animation.
- Interactivity allows users to communicate effectively with a multimedia software.

Multimedia Basics

- Medium
  - Way of sharing information
  - Voice, pictures, text
  - More effective with multiple mediums
  - Multimedia presents information with one medium
- Interactivity
  - Users and program respond
  - Users can control the content
  - Main difference between TV and computer

Elements of Multimedia

- Text
  - Different fonts with different colors are used in multimedia software
- Graphics
  - Photographs and drawings are graphics
  - They may be two color, grayscale or color
  - Used extensively in multimedia software
- Audio
  - Speech, music and other type of sound are considered audio.
  - Engages audiences auditory system
  - Without audio multimedia software feels dumb
  - Small beeps and tones are often used a effective feedback for user inputs or errors

Elements of Multimedia

- Video
  - Videos are recorded by video camera
  - They may contain human performance doing something
  - Digital format video required
- Animation
  - Human created video
  - An animation may cause movements to some texts, graphics, etc
  - Animations are video that cannot be shot with a camera

Application of Multimedia

- In Education
  - Multimedia presentations used instead of blackboard in schools
  - CDs with education material can help students study alone
  - Internet helps distant learning
- In Workplace
  - Computer Based Trainings (CBT) helps organizations train employees more efficiently
- At Home
  - Video on demand
  - Video games
  - Online library

Graphic File Formats

- Bitmapped images
  - Most common image type
  - Also called raster images
  - Image is drawn using a pixel grid
  - Each grid contains a color
  - Color depth
    - Number of usable colors
  - Used to store drawings or photographs
  - Resizing image can reduce quality

Graphic File Formats

- Vector images
  - Drawn using mathematical formulas
  - Formulas describe the line properties
  - CAD and animation software
  - Resizing image will not reduce quality

Graphic File Formats

- File formats and compatibility
  - Method for storing an image
  - Each method has pros and cons
  - Some formats are proprietary
  - Graphic software can handle all formats

Graphic File Formats

- Common bitmapped file formats
  - BMP
  - EMF
  - GIF
  - JPG
  - PICT
  - PNG
  - TIFF

Graphic File Formats

- Vector file formats
  - Most vector formats are proprietary
  - Two universal formats exist
  - DXF
  - IGES

Acquiring Images

- Scanners
  - Like a photocopier
  - Image is saved onto disk
  - Scanners import a variety of formats

Acquiring Images

- Digital cameras
  - Stores digitized images
  - Uses long term storage
  - Image is usually a JPG file

Acquiring Images

- Digital video cameras
  - Stores full motion video
  - Uses long term storage
  - Movie can be transferred to DVD

Acquiring Images

- Clip art
  - Originally a book with images
  - Now a CD with images
  - Most office suites include a selection
  - Additional clip art is online

Graphics Software

- Paint programs
  - Create bitmap images
  - Includes sophisticated tools
  - Artists draw with several brushes
  - Objects drawn become permanent
  - Windows Paint

Graphics Software

- Draw programs
  - Create vector based images
  - Used when accuracy is critical
  - Objects have an outline and fill
    - Both have line style and color
    - Can fill using pictures
  - Adobe Illustrator

Graphics Software

- Photo-editing software
  - Modify and manipulate digital images
  - Work at the pixel level
  - Images can be enhanced
  - Picture flaws can be repaired
  - Pictures can be completely changed
  - Photoshop and GIMP

Enhancing a Photo

Graphics Software

- Computer Aided Drafting (CAD)
  - Generates vector files
  - Engineering and design fields
  - Drawings accurate to the millimeter
  - AutoCAD

Graphics Software

- 3D modeling software
  - Generates three dimensional images
  - Image can be shaped on screen
  - Image is animated frame by frame

Graphics Software

- Computer generated imaging
  - Generates photo realistic images
  - Used for movies and television
  - Software eliminates tedious parts

Multimedia Hardware

- Sound card
  - Produces audio for human use
  - Mainly converts digital audio data to analog data
  - In addition to audio, a good sound card has MIDI sequencer
  - A MIDI sequencer is a software gear for playing almost all music instruments
  - Most PCs have built in sound cards
- Microphone
  - Required to input speech into computers
  - Converts analog sound into digital data for computer

Multimedia Hardware

- Speaker/ Sound box
  - Connected to sound card
  - Sound card produces analog audio from digital audio and directs them to the speaker
- Multimedia projector
  - Converts video signal from computer to lights for showcasing multimedia onto large screens
  - Vital tool for multimedia presentation

Creating Multimedia

- Common steps include
  - Planning
  - Content collection/Creation
  - Copyright
  - Authoring
  - Testing and debugging
  - Delivering

Self Study

- Section 8.3 : Physics of Multimedia Elements

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Homework Based on Lecture 10

- Questions from Chapter 8, Introduction to computers by Mohammed Alamgir
- Exercise 1, 2, 3, 4, 6, 15, 16, 19, 26, 37, 38, 39, 40, 41,42

END