Introduction

Multimedia

- Of or relating to an application that can combine text, graphics, full-motion video, and sound into an integrated package
  - Interactive computer-mediated presentation that includes at least two of the following: text, sound, still pictures, motion graphics, animation
  - Presentation must be interactive and controlled by a computer
- Examples
  - Entertainment (think Toy Story)
  - Special effects (music and video together – suspense thrillers)
  - Scientific data analysis and communication
  - Business data communications (pie/bar charts)
  - Educational materials (encyclopedias)
  - Simulations and games
  - Enabling technologies (readers for blind people)
- Goal is always effective communication, but it may not be always possible
  - As an exercise, you should visit a few web sites and see how text and graphics are organized, whether they are cluttered, whether they take too long to download, and how pleasing is the organization to the eye
  - Interpersonal communications
  - Aesthetics vs nerdhood

Storytelling/Theater/Dance

- Story telling
  - Tones of speech vs flat rendering
  - Narration of a book vs enaction of events
- Theater
  - Sense of reaction or feeling evoked in audience
  - Actor vs content (script)
  - Interaction between actor and audience
  - Difference between theater and cinema/multimedia
  - Creation of illusions using scenery and lighting
  - Contrast with virtual reality
- Dance

Music and Drama

- Enhance the effectiveness of communication

- Exaggerate the effects (punching sounds inmovies)
- Songs as communication
  - Words in concert
  - Sound of Music
- Music as communication
  - Effect on listener's mood
  - James Bond

Pictorial representation of reality and imagination

- Images
  - Two- and three-dimensional images
  - Pictorial enhancement of text to convey meaning – italics/bold/font
- Special effects
  - Movies
  - Art by Escher
- Symbolism
  - Cinema techniques
  - Depicting a scene involving a kiss
    - Avoiding censors by showing a kiss between two birds

Roles of the computer

- Using computers as training devices
- First multimedia computers
  - Control of actual devices instead of simulation
  - Planning a presentation using projector and tape player
  - The "Link Trainer" dating from second world war
- Hardware developments
  - Storage capacity
  - Processor speed (including vectorization capability)
  - Bus bandwidth
  - Compression techniques to transmit data internally inside a machine
  - Interaction between multiple machines and simulation hardware
- Development of network and software
  - Client server machines
  - Graphical user interfaces
  - Handling video sequences

  - Special effects

Current state of the art of multimedia systems

- Development tools vs Delivery devices
- Development hardware and software
  - Think of spell checker and grammer checkers for text (development)
  - Powerpoint (delivery)
  - High definition scanning
  - Special effects editors
  - Image processing
    - Software – Libraries like openGL
    - Hardware – Silicon Graphics workstations
  - Sound – Speech and music
    - Speech synthesis
    - Voice recognition
    - Sound bite editing
- Delivery hardware and software
  - Vision and sound delivery
  - Virtual reality environments
  - World-wide web

Multimedia Applications

- Computer based/assisted instruction
- Commerce
- Scientific Data Analysis
  - Visualization of scientific data for help in analysis
  - Simulation of complex electronic circuits before building them
  - Interactive building of machinery
  - 3D models of objects such as molecules and DNA sequences
  - Imagining the future (building space station)
- Instruction
  - Computer-based training
  - Computer-assisted training
  - Encyclopedia
  - Standardized testing
- Business applications
  - Internal training and presentations
  - Showing and forecasting trends

  - Advertising mixed with entertainment
- Entertainment
  - Nintendo games
  - Simulation games
  - Movie games and alternate endings on DVD
- Enabling technologies
  - Text to speech readers
  - Large font makers
  - Train learning-disabled adults to become independent
- Fine arts and humanities
  - Multimedia and virtual tours of museums

Foreseeable future multimedia systems

- Virtual reality
- Interactive television
- Wearable computing