

001:

BASIC MULTIMEDIA CONCEPTS

INTRODUCTION TO MULTIMEDIA:- TEXT, GRAPHICS, SOUND, VIDEO, ANIMATION IN A SINGLE APPLICATION

TuK



*

Bachelor Information Technology/Communications and Computing
Networks Year 4 Semester 1

MULTIMEDIA APPLICATIONS / SYSTEMS AND APPLICATIONS

SUBJECT CODE: ECCI/ECII 4102

OVERVIEW

- 1. Lecture Introduction & Attendance Registration**
- 2. Lecture Aims & Objectives**
- 3. Lecture 1 Outline**
- 4. Recommended Chapter from Recommended Reading List**
- 5. Lecture 1 Topic**
- 7. Q&A**

LECTURE AIMS & OBJECTIVES

- 1) To introduce students to Multimedia text, graphic, sound, video & animation theories.
- 2) To equip students with the knowledge to develop and use multimedia text, graphics, sound, video, animation skills
- 3) To develop students' expertise in the use of Multimedia text, graphics, sound, video & animation tools and techniques
 - 4) To design multimedia text, graphics, sound, video &animation applications
- 5) To implement the design, and maintain the implemented multimedia text, graphics, sound, video & animation systems while also supporting users
- 6) To enable graduates to find a wide variety of career opportunities in information technology related areas in both private and public sectors

BASIC MULTIMEDIA CONCEPTS

INTRODUCTION TO MULTIMEDIA

TEXT,

GRAPHICS,

SOUND,

VIDEO

&

ANIMATION IN A SINGLE
APPLICATION

RECOMMENDED CHAPTER FROM RECOMMENDED READING LIST

Chapter 1-3 from

“Multimedia Foundations: Core Concepts for Digital Design” Costello;
Vic, Focal Press, 2016

“Multimedia: Making It Work” Vaughan; Tay, McGraw-Hill Education,
9th Edition, 2014

“Multimedia-based Instructional Design: Computer-Based Training;
Web-Based Training; Distance Broadcast Training;
Performance-Based Solutions”, Lee; William W, Owens; Diana L,
Pfeiffer, 2004

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

WHAT IS MULTIMEDIA?

- Applications that use multiple interactive modalities of:-
 - Text
 - Images / graphics
 - Animation
 - Video
 - Sound
- to their advantage.

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

- The opposite of multi-media is single(traditional) media i.e. use of only one medium e.g. only text in traditional newspapers

EXAMPLES OF MULTIMEDIA-SHAPE SHIFTING TV



Mosaic

You're located outside of our service area.

Mosaic from Steven Soderbergh is available within the United States, including the District of Columbia and the US territories of Puerto Rico, the US Virgin Islands, Guam, and American Samoa.

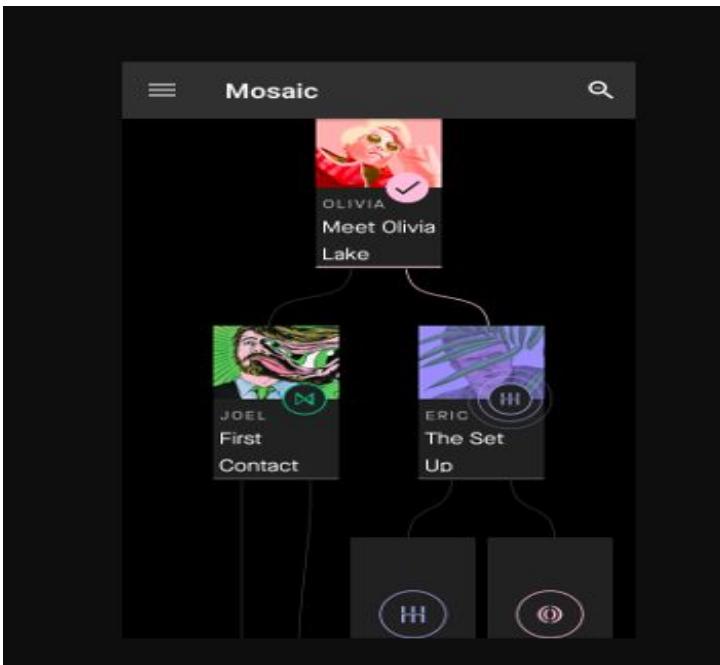


  © Podop 2018. All rights reserved.

[Support](#) | [Privacy Policy](#) | [Terms of Service](#)

EXAMPLES OF MULTIMEDIA:- INTERACTIVE T.V.

MAIN NAVIGATION FLOW BETWEEN MOSAIC SSTV



- Viewed content is check-marked ✓
- Content has character viewpoints, titles and specific character icons
- Some content is for future viewing, and unlockable
- Mosaic is both a tv show & video game.
- Users choose which perspectives to follow at various branch points
- No "control" over characters
- Ending is always the same

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN
A SINGLE APPLICATION

SHAPE SHIFTING TV

-aka ssTV

-Integration of traditional television technology (conventional audio-visual storytelling recounting real or fictional events prepared by experts) with additional provision of electronic services (e.g. betting, game playing, social interactive TV) and interactive programs

-Actions taken by active viewers should result in more rewarding viewing experiences



INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

SHAPE SHIFTING TV

-The fundamental method of interaction involved in storytelling is the audio-visual streams are generated and delivered automatically as response to active viewer interaction



EXAMPLES OF MULTIMEDIA-DIGITAL MAGAZINE

<https://parametric.press/issue-02/>

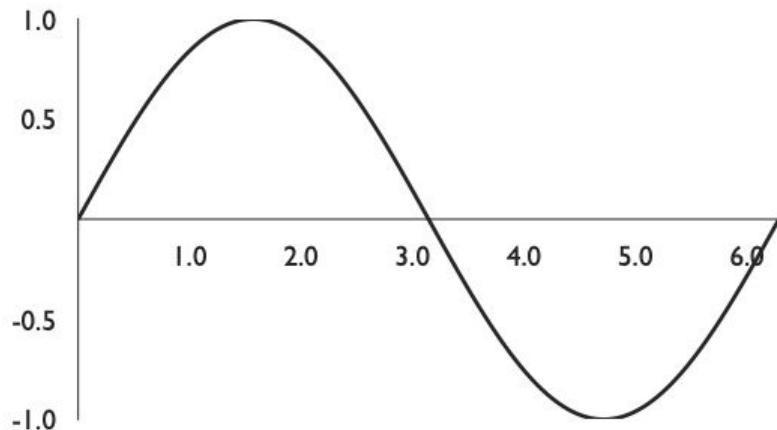
The screenshot shows a dark-themed digital magazine layout. At the top left, it says "Parametric Press" and "The Climate Issue". Below that, there are five article cards:

- Your Personal Carbon History** by Aatish Bhatia
- The Corporations Behind Climate Change** by Geoffrey Litt, Seth Thompson
- Tiny Algae and the Political Theater of Planting One Trillion Trees** by Benjamin Cooley
- Drought of the Sinking Delta** by Christina Orieschnig
- The Hidden Cost of Digital Consumption** by Halden Lin, Aishwarya Nirmal, Shobhit Hathi, Lilian Liang

A small globe icon is positioned between the third and fourth articles. To the right of the magazine preview, there is a large, abstract image of green and black textured patterns, and a quote: "To fight climate change, it's time to start thinking big by thinking small."

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

MAIN NAVIGATION FLOW BETWEEN PARAMETRIC PRESS



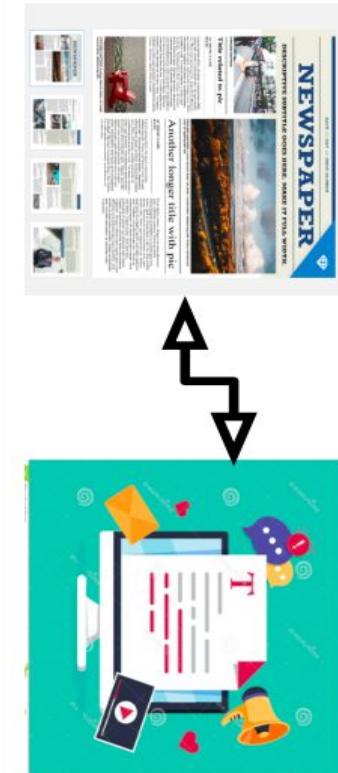
-features include force directed layouts and Kernel density estimation as well as graph search algorithms

-Familiar markup with special syntax allows input of text and embedding JavaScript inline with text.

-Also uses chart components

EXAMPLES OF MULTIMEDIA-DIGITAL MAGAZINE

- Publishing interactive print media content requires combining text, code, and other media
- Idyll is an open-source toolkit for writing interactive articles
- Utilizes data visualization and interactivity for interactive storytelling
- Contains archive link to WARC/WACZ files which store all information associated to articles, and can be run and re-read
- includes reusable components, custom data visualizations, and a publishing engine



INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

MULTIMEDIA AUTHORING TOOLS

EXAMPLES OF TOOLS AND TECHNIQUES

- <https://www.canva.com/>
- <https://idyll-lang.org/>
- <http://aprt.us/>
-
-

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

CHARACTERISTICS OF MULTIMEDIA

- Increases impact (of the message or user) on the audience
- Interactivity
- Structured to build on previous learning
- Can give feedback on performance
- Can be repeated

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

WHAT IS INTERACTIVITY?

- dialogue between user and application (i.e. expectation of behaviour)
- User should be able to respond immediately to the application/system and modify processes
- The feeling of involvement directly with a world of objects rather than just communicating through an intermediary

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

WHAT IS INTERACTIVITY?

- Result? linear or non-linear path through the application/system
- Has 7 stages of action:-
 - Goal
 - Intention
 - Action specifications
 - Execution
 - Perception
 - Interpretation
 - Evaluation

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

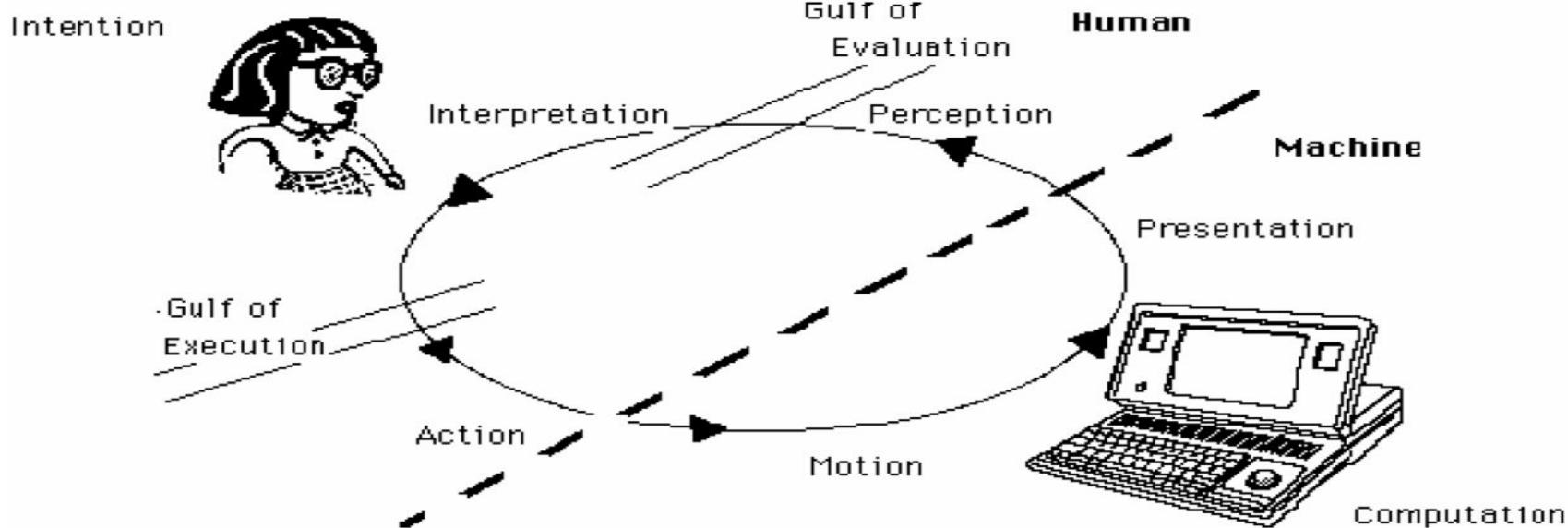
TYPES OF INTERACTIVITY:-

- Dynamic linear or dynamic non-linear interactivity:-

(where the system / application changes depending on action by either the author and / or the user)

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

THE INTERACTION CYCLE



INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

THE INTERACTIVITY CYCLE:-

- *Gulf of evaluation*:- the thinking required to understand what is being perceived i.e. turning raw sensory data into understanding of objects, properties and events.
- *Gulf of execution*:- the thinking required to figure out how to get something done i.e. turning the high-level intention into specific physical actions

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

EVALUATE THE INTERACTION OF SMARTPHONE

- Direct manipulation
- Reducing distance
- Engagement
- Perceived affordances
- Natural mappings
- Constraints
- Feedback
- Avoiding error



INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA

HISTORY OF MULTIMEDIA

- Newspapers (first mass communication medium using text/graphics/images)
- **Douglas Engelbart and the NLS (Online System) 1968,**
- **Tim-Berners Lee and the World Wide Web,**

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA TEXT

DEFINITION OF TRADITIONAL TEXT:-

- A string of printable alphanumeric characters (letters, numbers, symbols etc) specified on the keyboard and separated by whitespace characters
- Has 2 layers:- abstraction layer and physical layer.
- Physical layer is the standard character encoding of target alphanumeric characters
- Abstraction layer sits immediately above physical layer

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA TEXT

DEFINITION OF TRADITIONAL TEXT

- Considered primitive programming language
- Can become a regular language (with expressions) or a mini-program with compilation process
- It has named registers (identifiers) and positions in the sequence of characters comprising the text.
- Read linearly i.e. from start to finish

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA TEXT

DEFINITION OF TRADITIONAL TEXT

- Its creation or manipulation can be automated
- Openly works raw standardized data rather than proprietary methods.
- Markups e.g. font and color are not really a distinguishing factor,

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA TEXT

MULTIMEDIA TEXT

- APPLICATIONS:**-Turing Test pass:-a long-standing challenge for computers communicating with humans i.e. can a PC communicate (text/audio/visual) in such a way that it's' impossible for humans to determine whether they are talking to a computer or another human being
- Must be editable and navigable (i.e. cues used by navigation tools e.g. browsers, editors, file formats)
- Traditional and multimedia text have human-readable formats that identify structure and elements

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

TRADITIONAL TEXT Vs MULTIMEDIA TEXT

MULTIMEDIA TEXT

- Requires protocols to handle its transmission
- Forms the basis for computing software languages with more complex structures and standards.
- Can integrate with other languages,
- Can be manipulated on both client and server side.

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA-ANIMATION

ANIMATION

- The process of generating animated images using computer graphics.
- Refers to process of exploiting persistence of vision to produce a series of moving images that look animated
- Also refers to manipulating a series of still images to give the appearance of movement or life like motion
- Computer generated imagery refers to both static scenes and dynamic images

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA-ANIMATION

ANIMATION

- Has a frame rate (determines the persistence of vision and smoothness of image to the user)
- 30 frames/sec refresh rate (flicker free)
- 25 f/s (PAL) -?
- 24 f/s (Movies)

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA-ANIMATION

ANIMATION

- 12 f/s (Cartoons)
- 8 f/s (minimum)
- An image is flicker free when animation speed matches refresh rate of the screen,
- 2 Types of animation:- Cell-based animation
Path-based animation

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA-ANIMATION

CELL-BASED ANIMATION

- Creation of individual images in cells (frames) which produce motion when played
- Traditional type of animation method

PATH-BASED ANIMATION

- The start and end point and path for the object to follow are defined by vectors
- The background is fixed
- Saves memory and processing time especially if the image is an object

INTRODUCTION MULTIMEDIA: BASIC MULTIMEDIA CONCEPTS, TEXT, GRAPHICS, SOUND, VIDEO & ANIMATION IN A SINGLE APPLICATION

INTRODUCTION TO MULTIMEDIA-ANIMATION

APPLICATIONS OF ANIMATION

- Films
- Software (e.g. Adobe Flash)

GROUP WORK

How would you evaluate the multimedia interactivity of an ipod classic?



QUESTION AND ANSWER SESSION

ANY

QUESTIONS

?