Multimedia System Design [MSD]

B.E. Sem. VIII [CMPN]

EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Oral Exam	–	25
Term Work	–	25

SYLLABUS

1. **Introduction**
   What is multimedia, Properties of multimedia systems: Independency, computer support, communication systems, Global structure, Multimedia system Architecture:- IMA, workstation , network architecture.
   Evolving Technologies, Applications of multimedia.

2. **Multimedia data and interactions**
   Data Streams:-Elements of multimedia systems, Objects of multimedia systems, Types: Traditional Vs Continuous, Medium**:** perception, representation, presentation, storage, transmission, information exchange
   Multimedia communication system Model:- Interpersonal communication, Interactive application over internet, Entertainment and application.
   Requirements : User, network Architectural Issues Multimedia communication subsystems :- Application subsystem, Transport subsystem, QoS and resource management, basic concepts establishing and closing multimedia call ,Managing resources during multimedia transmission.

3. **Compression & Decompression**
   Introduction to digitization principle -text ,image, audio, video, File formats – RTF, TIFF,RIFF, Need, types of data compression , Binary (Text) compression scheme, Packbit encoding (RLE), CCITT group 3 1D,3 21D and 4 2D compression, Color Image,JPEG methodology, JPEG 2000 standard, Performance comparison of JPEG and JPEG2000

4. **Video**
   Introduction to digital video: Types – Chromasub sampling, CCIR , HDTV
   Computer Video format, Video compression: Based on motion compression
   Motion vector search technique : Sequential, 2D logarithmic, Hierarchal search, Standards used – H.261,Comparison of MPEG and H.264 , MPEG 1,2,4,7 and File formats – DVI

5. **Audio/Sound**
   Basic sound concepts :Computer representation of sound, Audio formats- MIDI,WAV
   Music: MIDI concepts, MIDI Devices, MIDI Messages, MIDI SMPTE timing standard, MIDI Software:Speech, Speech Generation, Speech Analysis, Speech Transmission
   Audio Compression: ADPCM in speech coding, MPEG audio

6. **Storage Requirements**
   Basic technology: Video disk :Audio data rate – SNR wrt VCD player , CD player, DVD, Juke box, Peripherals and databases required for multimedia Input devices :- Electronic pen, Scanner, digital camera
   Output devices :- Printers (Inkjet, laser) , plotters
   Multimedia database system :Characteristics, Data structures
   Operations, Models : Object oriented, relational databases

7. **Distributed Multimedia Systems**
   Components of distributed MM system, MM object server , managing distributed objects, Distributed C.S operations, synchronization, Real time multimedia, Requirement, Designing, Streaming protocols

8. **Multimedia presentation and Authoring**
   Multimedia system design & its Issues, Authoring Systems, Design Issues
   Approaches, Types, User Interface Issues, Architecture, Information characteristics for presentation, Presentation design knowledge, Effective HCI

9. **Applications**
   Copyright Act for multimedia and method of licensing
   Applications:-Multimedia animation, Virtual Reality, Knowledge based multimedia systems

References

1. Multimedia: Computing, Communications and Applications (*Steinmetz Ralf and Nahrstedt Klara*,) Pearson Education
2. Multimedia System design (*Prabhat K. Andheigh*,) Kiran Thakrar
3. Multimedia Systems (*Koegel Buford*) Pearson Education
4. Fundamentals of Multimedia (*Ze-Nian Li, Mark.S.Drew*)
5. Multimedia Communication Systems: Techniques, standards and networks (*K. R. Rao, D. Milovanovic*)
6. Multimedia database systems (*Subramanian,M.Kaufman*)
7. Computer Networking (*J.F.Kurose*), Pearson Edu
8. Multimedia communications (*Halshall*), Pearson,Edu
9. Multimedia Systems (*Koegel Buford*) Pearson Edu.

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