MOHAMMED SATHAK A J COLLEGE OF ENGINEERING
Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN

Department of Electronics and Communication Engineering

Name of the Subject	MULTIMEDIA COMPRESSION & COMMUNICATION		Regulation	2017				
Subject Code	EC8002		Year / Sem	III/VII				
Acad Year	AY 2020-2021		Batch	2018-2022				

Course Objective

To understand the compression schemes for voice

To understand the compression schemes for image and video

To design coding for text compression

To understand the QoS issues in multimedia network

To know the communication protocols for multimedia networking

Course Outcome

At the end of the course, the students should be able to:

CO1: Describe various Audio Compression Techniques

CO2:Describe Various Video Compression Techniques

CO3:Apply the compression concepts in Text.

CO4:Describe Various Image Compression Techniques.

CO5:Describe the concepts of networking and guarented service model in Multimedia

Lesson Plan

Sl. No.	Topic(s)	T / R* Book	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
UNIT I AUDIO COMPRESSION							
1	Introduction	T1	**1**	BB	L2	CO1	PO1-PO2
2	Sampling	T1	**1**	BB	L2	CO1	PO1-PO2,PO3,PO6
3	Quantization of Speech (PCM)	T1	**1**	BB	L2	CO1	PO1-PO2,PO3,PO6
4	Differential PCM	T1	**1**	BB,PPT	L2	CO1	PO1-PO4
5	Adaptive Differential PCM	T1	**1**	BB,PPT	L2	CO1	PO1-PO4,P12
6	Delta Modulation	T1	**1**	BB,NPTEL	L2	CO1	PO1-PO3,PO5
7	Vector Quantization	T1	**1**	BB,NPTEL	L2	CO1	PO1-PO3,P12
8	Linear predictive coding	T1	**1**	BB,PPT	L2	CO1	PO1-PO3,P12
9	code excited LPC	T1	**1**	BB,PPT	L2	CO1	PO1-PO3,P12

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any
Assignment : Recent trends in multimedia

Evaluation method :   Assignment

UNIT II IMAGE AND VIDEO COMPRESSION							
10	Graphics Interchange format-	T1	**1**	BB	L2	CO4	PO1-PO5
11	Tagged image file format	T1	**1**	BB	L2	CO4	PO1-PO5

12	Digitized documents	T1	1	BB	L2	CO4	PO1-PO5
13	Digitized pictures	T1	1	BB	L2	CO4	PO1-PO5
14	JPEG	T1	1	BB	L4	CO4	PO1-PO5
15	Video encoding	T1	1	BB,PPT	L2	CO2	PO1-PO5,P12
6	Motion estimation	T1	1	BB,PPT	L2	CO2	PO1-PO5P12
17	overview of H.263	T1	1	BB	L2	CO2	PO1-PO5,P12
18	MPEG -2	T1	1	BB	L2	CO2	PO1-PO5

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any
case studies: Miniproject: Text compression using Huffman coding using MATLAB

Evaluation method : Design a algrothim and Simulate .

UNIT III TEXT COMPRESSION							
19	Text compression introduction	T1	1	BB,NPTEL	L2	CO3	PO1-PO6
20	static huffman coding	T1	1	PPT	L3	CO3	PO1-PO6
21	problem solving in static huffman coding	T1	1	PPT	L3	CO3	PO1-PO6
22	Dynamic Huffman Coding	T1	1	PPT	L3	CO3	PO1-PO6
23	Problem solving in Dynamic Huffman Coding	T1	1	PPT	L3	CO3	PO1-PO6
24	Arithmetic Coding	T1	1	PPT	L3	CO3	PO1-PO6
25	Problem solving in Arithmetic coding	T1	1	BB	L3	CO3	PO1-PO3,P12
26	Lempel Ziv Coding	T1	1	BB	L2	CO3	PO1-PO3,P12
27	LZW coding	T1	1	BB	L2	CO3	PO1-PO3,P12

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any
Miniproject: Image denoising

Evaluation method : Team of students combined and asked to write a MATLAB code for using any filter.

UNIT IV GUARANTED SERVICE MODEL							
28	Best Effort service model – Scheduling and Dropping policies	T1	1	BB	L2	CO5	PO1-PO3
29	– Network Performance Parameters – Quality of Service and metrics	T1	1	BB	L2	CO5	PO1-PO3
39	WFQ and its variants	T1	1	PPT	L2	CO5	PO1-PO3
31	– Random Early Detection – QoS aware	T1	1	PPT	L2	CO5	PO1-PO3
32	Routing – Admission Control	T1	1	PPT,NPETL	L2	CO5	PO1-PO3
33	Resource Reservation – RSVP	T1	1	BB,NPTEL	L2	CO5	PO1-PO3
34	Traffic Shaping Algorithms – Caching – Laissez Faire Approach	T1	1	PPT	L2	CO5	PO1-PO3,PO6
35	Possible Architectures	T1	1	BB	L2	CO5	PO1-PO3
36	An Overview of QoS Architectures	T1	1	PPT	L2	CO5	PO1-PO6,P12

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any
Quiz

Evaluation method :   Online MCQ Quiz

UNIT V MULTIMEDIA COMMUNICATION							
37	Stream characteristics for Continuous media	T1	1	PPT,NPTEL	L2	CO5	PO1-PO3
38	Temporal Relationship	T1	1	PPT	L2	CO5	PO1-PO3
39	– Object Stream Interactions, Media Levity, Media Synchronization	T1	1	PPT	L2	CO5	PO1-PO3
40	Models for Temporal Specifications	T1	1	PPT	L2	CO5	PO1-PO3,P12

41	Streaming of Audio and Video	T1	1	PPT	L2	CO5	PO1-PO3,P12
42	Jitter – Fixed playout and Adaptive playout	T1	1	PPT	L2	CO5	PO1-PO3.P12
43	Recovering from packet loss -RTSP	T1	1	PPT	L2	CO5	PO1-PO3,P12
44	Multimedia Communication Standards – RTP/RTCP	T1	1	BB	L2	CO5	PO1-PO3
45	SIP and H.263	T1	1	BB	L2	CO5	PO1-PO3

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any
Asisgnment on Arithemetic coding

Evaluation method: Assignment

Content Beyond the Syllabus Planned

1	Application support systems in multimedia
2	CRC Implementation

Text Books

1	Fred Halsall, ―Multimedia communication- Applications, Networks, Protocols and Standards‖, Pearson education, 2007

Reference Books

1	Tay Vaughan, ―Multimedia Making it work , McGraw-Hill Osborne Media, 2006
2	Kurose and W. Ross, ―Computer Networking ―A Top Down Approach, Pearson education, 3rd ed, 2005
3	KR. Rao,Z S Bojkovic, D A Milovanovic, ―Multimedia Communication Systems: Techniques, Standards, and Networks‖, Pearson Education 2007
4	R. Steimnetz, K. Nahrstedt, ―Multimedia Computing, Communications and Applications‖, Pearson Education, First ed, 1995
5	Nalin K Sharda, _Multimedia Information Networking', Prentice Hall of India, 1999
6	Aura Ganz, Zvi Ganz and Kitti Wongthawaravat, _Multimedia Wireless Networks: Technologies, Standards and QoS', Prentice Hall, 2003
7	Ellen Kayata Wesel, _Wireless Multimedia Communications: Networking Video, Voice and Data', Addision Wesley, 1998

Website / URL References

1	https://nptel.ac.in/content/storage2/courses/117105083/pdf/ssg_m1l1.pdf
2	https://nptel.ac.in/content/storage2/courses/117105083/pdf/ssg_m8l23.pdf
3	https://nptel.ac.in/courses/117/105/117105083/
4	https://nptel.ac.in/courses/117/105/117105083/

Blooms Level

Level 1 (L1) : Remembering	Lower Order Thinking	Fixed Hour Exams	Level 4 (L4) : Analysing		Higher Order Thinking	Projects / Mini Projects
Level 2 (L2) : Understanding			Level 5 (L5) : Evaluating			
Level 3 (L3) : Applying			Level 6 (L6) : Creating			

Mapping syllabus with Bloom's Taxonomy LOT and HOT

Unit No	Unit Name	L1	L2	L3	L4	L5	L6	LOT	HOT	Total
Unit 1	AUDIO COMPRESSION	0	9	0	0	0	0	9	0	9
Unit 2	TEXT AND VIDEO COMPRESSION	0	8	0	1	0	0	8	1	9
Unit 3	TEXT COMPRESSION	0	3	6	0	0	0	9	0	9
Unit 4	GUARANTED SERVICE MODEL	0	9	0	0	0	0	9	0	9
Unit 5	MULTIMEDIA COMMUNICATION	0	9	0	0	0	0	9	0	9
Total		0	38	6	1	0	0	44	1	45
Total Percentage		0.00	84.44	13.33	2.22	0.00	0.00	97.78	2.22	100.00

CO PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	1	0	0	1	1	0	0	0	0	0	2	1	0
CO2	3	2	1	0	1	0	0	0	0	0	0	1	1	0
CO3	3	2	1	0	0	1	0	0	0	0	0	1	1	0

CO4	2	1	1	0	0	1	0	0	0	0	0	1	1	0
CO5	3	1	0	0	0	0	0	0	0	0	0	1	0	0
Avg	2.6	1.4	0.6	0	0.4	0.6	0	0	0	0	0	1.2	0.8	0

	Justification for CO-PO mapping
CO1	Strong correlation for PO1 and Less correlation for PO2,is given as in CO1 and can be used to apply knowledge of engineering to Identify , formulate ,design and solve the problems.Less modern tools usage(PO5). Requires need to learn the concept of Multimedia principles (PO12).
CO2	Strong correlation for PO1 and Medium correlation for PO2,Less correlation for PO3is given as in CO2 and can be used to apply knowledge of engineering to Identify , formulate ,design and development solutions.Less modern tools usage(PO5). Requires need to learn the use of Multimedia compression techniques in real life(PO12).
CO3	Strong correlation for PO1 and Medium correlation for PO2,Less correlation for PO3 is given as in CO3 and can be used to apply knowledge of engineering to Identify , formulate ,design and development solutions.Need to demonstrate to society PO6. Requires need to learn the use of text and image compression techniques in real life(PO12).
CO4	Strong correlation for PO1 and Less correlation for PO2 is given as in CO4 and can be used to apply knowledge of engineering to Identify , formulate ,design and development solutions.Need to demonstrate to society PO6. Less correlation for PO3is given as in CO2 and can be used to apply knowledge of engineering to Identify , formulate ,design and development solutionsRequires need to learn is less(PO12).
CO5	Strong correlation for PO1 and Less correlation for PO2, is given as in CO2 and can be used to apply knowledge of engineering to Identify , formulate ,design and development solutions.Less correlation for PO3is given as in CO2 and can be used to apply knowledge of engineering to Identify , formulate ,design and development solutions Requires need to learn the use of Networking concepts (PO12).

3		High level		**2**		Moderate level		**1**			Low level		

Name & Sign of Faculty Incharge : MRS.I.S.SUGANTHI

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