

GUJARAT UNIVERSITY

K. S. SCHOOL OF BUSINESS MANAGEMENT

[Five Years' (Full-time) Integrated Degree Course]

Semester-9 [M.Sc. (CA & IT)]

Subject Code: - KS_C_CC-597

Subject Name: - Data Compression

Course Credit: - 3

Objective: - To be able to perform compression using various algorithm and decompress the data. To be able to measure the loss of data if compression is lossy

Unit No.	Course Content	Weight-age (%)
1	Introduction to lossless and lossy compressions, measures of performance. Mathematical preliminaries for lossless compression. Introduction of information theory, models-physical, probability, Markov, Coding , uniquely Decodable codes, Prefix codes	(20%)
2	Huffman coding , minimum variance Huffman codes, non-binary Huffman codes, Adaptive Huffman coding, Golomb codes, Rice codes, Tunstall codes, applications of Huffman coding,	(20%)
3	Dictionary techniques, Static Dictionary, Adaptive Dictionary, Context Based Compression, Predictive coding with Partial Match (PPM-PPMA-PPMB-PPMC).	(20%)
4	Mathematical preliminaries for lossy coding, Distortion criteria, Models-probability, linear, physical. Speech compression Digital Audio Concepts, Fundamentals, Sampling Variables, PC-Based sound, Lossless Compression of Sound, Problems and Results, Lossy compression, Silence Compression, Other Techniques	(20%)
5	Scalar quantization, Quantization Problem, Uniform Quantization, non-uniform Quantization, Vector Quantization, Differential coding schemes, Arithmetic coding	(20%)

Recommended Lecture Scheme: Approximately 40 to 45 hours in a semester

Recommended Practical Scheme: Not Applicable

Assignment: Minimum five assignments should be given.

Main Reference Books: Introduction to Data Compression, 4th edition, Khalid Sayood, Harcourt India, 2012.

Reference Books:- The Data Compression book , 2nd Edition, by Mark Nelson, Jean-Loup Gailly, 2005.
Elements of Data Compression, Adam Drozdek, Thomson Learning,