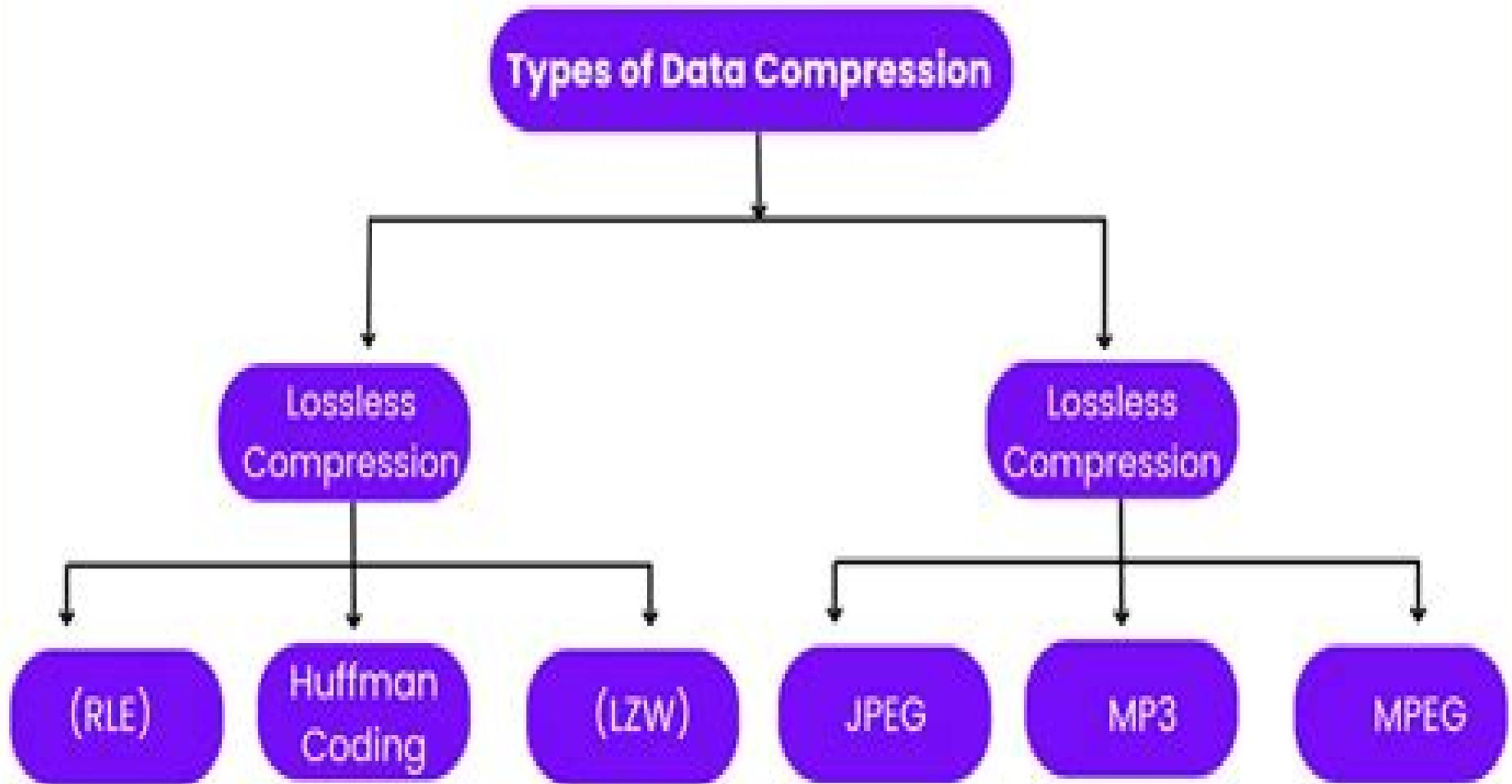


# Types of Data Compression



# Data Compression

**Victor M. Corman**



## **Data Compression:**

**Data Compression** David Salomon,2004-02-26 A comprehensive reference for the many different types and methods of compression including a detailed and helpful taxonomy an analysis of the most common methods and discussions on their use and comparative benefits The presentation is organized into the main branches of the field run length encoding statistical methods dictionary based methods image compression audio compression and video compression Detailed descriptions and explanations of the most well known and frequently used methods are covered in a self contained fashion with an accessible style and technical level for specialists and nonspecialists In short the book provides an invaluable reference and guide for all computer scientists computer engineers electrical engineers signal image processing engineers and other scientists needing a comprehensive compilation for a broad range of compression methods

**Introduction to Data Compression** Khalid Sayood,2000 And the downloadable software gives you the opportunity to see firsthand how various algorithms work to choose and implement appropriate techniques in your own applications and to build your own algorithms BOOK JACKET

**A Concise Introduction to Data Compression** David Salomon,2007-12-18 This clearly written book offers readers a succinct foundation to the most important topics in the field of data compression Part I presents the basic approaches to data compression and describes a few popular techniques and methods that are commonly used to compress data The reader will discover essential concepts Part II concentrates on advanced techniques such as arithmetic coding orthogonal transforms subband transforms and Burrows Wheeler transform This book is the perfect reference for advanced undergraduates in computer science and requires a minimum of mathematics An author maintained website provides errata and auxiliary material

**Image and Text Compression** James A. Storer,2012-12-06 James A Storer Computer Science Dept Brandeis University Waltham MA 02254 Data compression is the process of encoding a body of data to reduce storage requirements With Lossless compression data can be decompressed to be identical to the original whereas with lossy compression decompressed data may be an acceptable approximation according to some fidelity criterion to the original For example with digitized video it may only be necessary that the decompressed video look as good as the original to the human eye The two primary functions of data compression are Storage The capacity of a storage device can be effectively increased with data compression software or hardware that compresses a body of data on its way to the storage device and decompress it when it is retrieved Communications The bandwidth of a digital communication link can be effectively increased by compressing data at the sending end and decompressing data at the receiving end Here it can be crucial that compression and decompression can be performed in real time

*Data Compression--a Comparison of Methods* Jules Aronson,1977 **Handbook of Data Compression** David Salomon,Giovanni Motta,2010-01-18 Data compression is one of the most important fields and tools in modern computing From archiving data to CD ROMs and from coding theory to image analysis many facets of modern computing rely upon data compression This book provides a comprehensive reference for the many different types and

methods of compression Included are a detailed and helpful taxonomy analysis of most common methods and discussions on the use and comparative benefits of methods and description of how to use them Detailed descriptions and explanations of the most well known and frequently used compression methods are covered in a self contained fashion with an accessible style and technical level for specialists and non specialists

**Understanding Compression** Colt McAnlis,Aleks

Haecky,2016-07-13 If you want to attract and retain users in the booming mobile services market you need a quick loading app that won t churn through their data plans The key is to compress multimedia and other data into smaller files but finding the right method is tricky This witty book helps you understand how data compression algorithms work in theory and practice so you can choose the best solution among all the available compression tools With tables diagrams games and as little math as possible authors Colt McAnlis and Aleks Haecky neatly explain the fundamentals Learn how compressed files are better cheaper and faster to distribute and consume and how they ll give you a competitive edge Learn why compression has become crucial as data production continues to skyrocket Know your data circumstances and algorithm options when choosing compression tools Explore variable length codes statistical compression arithmetic numerical coding dictionary encodings and context modeling Examine tradeoffs between file size and quality when choosing image compressors Learn ways to compress client and server generated data objects Meet the inventors and visionaries who created data compression algorithms

**Data Compression in Digital Systems** Roy Hoffman,2012-12-06

Data compression is now indispensable to products and services of many industries including computers communications healthcare publishing and entertainment This invaluable resource introduces this area to information system managers and others who need to understand how it is changing the world of digital systems For those who know the technology well it reveals what happens when data compression is used in real world applications and provides guidance for future technology development

*Data*

*Compression* David Salomon,2012-12-06 viii The second new chapter Chapter 6 discusses video compression The chapter opens with a general description of CRT operation and basic analog and digital video concepts It continues with a general discussion of video compression and it concludes with a description of MPEG 1 and H 261 Audio compression is the topic of the third new chapter Chapter 7 The first topic in this chapter is the properties of the human audible system and how they can be exploited to achieve lossy audio compression A discussion of a few simple audio compression methods follows and the chapter concludes with a description of the three audio layers of MPEG 1 including the very popular mp3 format Other new material consists of the following Conditional image RLE Section 1 4 2 Scalar quantization Section 1 6 The QM coder used in JPEG JPEG 2000 and JBIG is now included in Section 2 16 Context tree weighting is discussed in Section 2 19 Its extension to lossless image compression is the topic of Section 4 24 Section 3 4 discusses a sliding buffer method called repetition times The troublesome issue of patents is now also included Section 3 25 The relatively unknown Gray codes are discussed in Section 4 2 1 in connection with image compression Section 4 3 discusses intuitive methods for image compression such as

subplining and vector quantization

A Guide to Data Compression Methods David Salomon, 2013-03-20 In 1829 Louis Braille a young organist in a Paris church blind since age 3 invented the well known code for the blind still in common use today all over the world and named after him Braille himself modified his code in 1834 and there have been several modifications since However the basic design of this code where each character is represented by a group of 3 x 2 dots has remained intact The dots are embossed on thick paper and each can be raised or flat i e present or absent Each dot is therefore equivalent to one bit of information As a result the Braille code Figure 1 is a 6 bit code and can therefore represent 64 symbols the code of six flat dots indicates a blank space Braille s followers extended the capabilities of his code in several ways One important extension is contractions These are letters that when they stand alone mean words For example the letter b standing alone or with punctuation means the word but the letter e standing alone means every and p means people Another extension is short form words These are combinations of two or more codes that mean an entire word short form words may contain contractions For example ab means about rcv means receive and the mvs means themselves The the in parentheses is a contraction dots 2 3 4 6 Figure 2 shows some examples of these special codes

1995 Science Information Management and Data Compression Workshop James Charles Tilton, 1995 Abstract This workshop explored promising computational approaches for handling the collection ingestion archival and retrieval of large quantities of data in future Earth and space science missions It consisted of fourteen presentations covering a range of information management and data compression approaches that are being or have been integrated into actual or prototypical Earth or space science data information systems or that hold promise for such an application

Data Compression Techniques and Applications Thomas J. Lynch, 1985 There is a growing interest in applying data compression techniques to actual data and communication systems in the commercial military and government agency sectors In each potential application there is a need to learn what compression techniques are available how they operate and what the implementation considerations are for each technique This book provides this information and serves as a reference for practicing communication engineers computer scientists information scientists and data systems managers No experience in data compression is necessary to use this book each compression technique is described separately and fully and the theoretical background developed so outside references are not needed

**The Data Compression Book** Mark Nelson, Jean-Loup Gailly, 1995-12-14 The Data Compression Book Second Edition The Data Compression Book is the most authoritative guide to data compression techniques available This second edition has been updated to include fractal compression techniques and all the latest developments in the compression field All the code in the previous edition has been updated to run with today s compilers and has been tested on multiple platforms to ensure flawless performance You ll learn to write C programs for nearly any environment as you explore different compression methods Nelson and Gailly discuss the theory behind each method and apply the techniques involved to shrink data down to a minimum Each technique is illustrated with a complete functional C program that not only

demonstrates how data compression works but it also can be incorporated into your own data compression programs You'll also get detailed benchmarks demonstrating the speed and compression ability of each technique The code in this book has been tested on a variety of platforms and compilers including Microsoft Visual C 1.5 with MS-DOS 5.0 and 6.22 Borland C 4.0 and 4.5 with MS-DOS 5.0 and 6.22 Symantec C 6.0 and 7.0 with MS-DOS 5.0 Interactive Unix System 3.2 with the portable C compiler Solaris 2.4 with the SunSoft compiler and Linux 1.1 with the Gnu C Compiler Topics Include The Shannon-Fano and Huffman coding techniques Adaptive Huffman coding techniques Lossy compression The JPEG compression algorithm Fractal compression techniques Arithmetic coding Dictionary compression methods

*Data Compression* Gilbert Held, Thomas R. Marshall, 1991-08 Provides professionals and students with a path to faster data transmission times and reduced transmission costs with its in-depth examination of practical and easy-to-implement data compression techniques Retaining all data compression fundamentals from the first two editions the Third Edition expands to include information on the structure and operation of several popular compression algorithms new to the market including Microcom Networking Protocol MNP Class 5 data compression and MNP Class 7 Enhanced Data Compression Numerous methods to enhance the efficiency of both character-oriented and statistical compression techniques are included as is a new chapter on character compression that discusses three methods to be used to obtain the special compression indicating character **A**

**Block-sorting Lossless Data Compression Algorithm** Michael Burrows, David J. Wheeler, 1994 Abstract We describe a block-sorting lossless data compression algorithm and our implementation of that algorithm We compare the performance of our implementation with widely available data compressors running on the same hardware The algorithm works by applying a reversible transformation to a block of input text The transformation does not itself compress the data but reorders it to make it easy to compress with simple algorithms such as move-to-front coding Our algorithm achieves speed comparable to algorithms based on the techniques of Lempel and Ziv but obtains compression close to the best statistical modelling techniques The size of the input block must be large a few kilobytes to achieve good compression

[Data compression : techniques and applications ; hardware and software considerations](#) Thomas R. Marshall, Gilbert Held, 1983 *Data*

*Compression* Gilbert Held, 1991 **Proceedings of the Scientific Data Compression Workshop**, 1977

**Hyperspectral Data Compression** Giovanni Motta, Francesco Rizzo, James A. Storer, 2006-06-03 Hyperspectral Data Compression provides a survey of recent results in the field of compression of remote sensed 3D data with a particular interest in hyperspectral imagery Chapter 1 addresses compression architecture and reviews and compares compression methods Chapters 2 through 4 focus on lossless compression where the decompressed image must be bit-for-bit identical to the original Chapter 5 contributed by the editors describes a lossless algorithm based on vector quantization with extensions to near-lossless and possibly lossy compression for efficient browsing and pure pixel classification Chapter 6 deals with near-lossless compression while Chapter 7 considers lossy techniques constrained by almost perfect classification Chapters 8

through 12 address lossy compression of hyperspectral imagery where there is a tradeoff between compression achieved and the quality of the decompressed image Chapter 13 examines artifacts that can arise from lossy compression Fundamental Data Compression Ida Mengyi Pu,2005-11-03 Fundamental Data Compression provides all the information students need to be able to use this essential technology in their future careers A huge active research field and a part of many people s everyday lives compression technology is an essential part of today s Computer Science and Electronic Engineering courses With the help of this book students can gain a thorough understanding of the underlying theory and algorithms as well as specific techniques used in a range of scenarios including the application of compression techniques to text still images video and audio Practical exercises projects and exam questions reinforce learning along with suggestions for further reading Dedicated data compression textbook for use on undergraduate courses Provides essential knowledge for today s web multimedia applications Accessible well structured text backed up by extensive exercises and sample exam questions

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