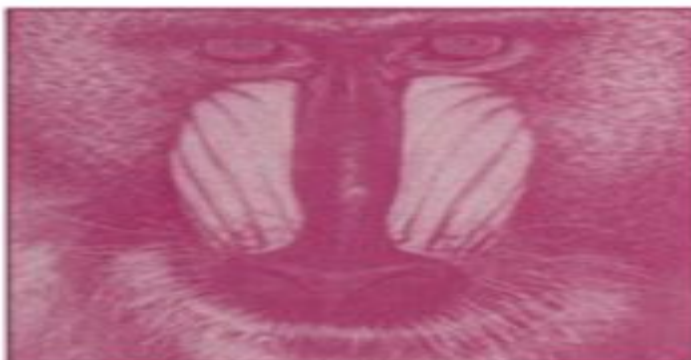


Paul Michael Farrelle

Recursive Block Coding for Image Data Compression



Springer-Verlag

Recursive Block Coding For Image Data Compression

Michael P. Ekstrom



Recursive Block Coding For Image Data Compression:

Recursive Block Coding for Image Data Compression Paul M. Farrelle, 2012-12-06 Recursive Block Coding a new image data compression technique that has its roots in noncausal models for 1d and 2d signals is the subject of this book The underlying theory provides a multitude of compression algorithms that encompass two course coding quad tree coding hybrid coding and so on Since the noncausal models provide a fundamentally different image representation they lead to new approaches to many existing algorithms including useful approaches for asymmetric progressive and adaptive coding techniques On the theoretical front the basic result shows that a random field an ensemble of images can be coded block by block such that the interblock redundancy can be completely removed while the individual blocks are transform coded On the practical side the artifact of tiling a block boundary effect present in conventional block by block transform coding techniques has been greatly suppressed This book contains not only a theoretical discussion of the algorithms but also exhaustive simulation and suggested methodologies for ensemble design techniques Each of the resulting algorithms has been applied to twelve images over a wide range of image data rates and the results are reported using subjective descriptions photographs mathematical MSE values and h plots a recently proposed graphical representation showing a high level of agreement with image quality as judged subjectively

Recursive Block Coding for Image Data Compression Paul Michael Farrelle, 1990

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 David Salomon, 2013-03-09 Data compression is one of the most important techniques in computing engineering From archiving data to CD ROMs and from coding theory to image analysis many facets of computing make use of data compression in one form or another This book is intended to provide an overview of the many different types of compression it includes a taxonomy an analysis of the most common systems of compression discussion of their relative benefits and disadvantages and their most common usages Readers are presupposed to have a basic understanding of computer science essentially the storage of data in bytes and bits and computing terminology but otherwise this book is self contained The book divides naturally into four main parts based on the

main branches of data compression run length encoding statistical methods dictionary based methods and lossy image compression where in contrast to the other techniques information in the data may be lost but an acceptable standard of image quality retained Detailed descriptions of many of the most well known compression techniques are covered including Zip BinHex Huffman coding GIF and many others **Space and Earth Science Data Compression Workshop**, 1993

Computer Analysis of Images and Patterns Dmitry Chetverikov, Walter Kropatsch, 1993-08-30 This volume constitutes the proceedings of the 5th International Conference on Computer Analysis of Images and Patterns CAIP 93 held in Budapest Hungary in September 1993 Formerly the events in this biennial conference series were thought as a forum where East European researchers and professionals from academia and industry had an opportunity to discuss their results and ideas with Western colleagues active in image processing and pattern recognition Now CAIP 93 has a much more international scope and in the future these conferences will not any longer take place only in East European countries but roam throughout whole Europe Besides invited talks by Belikova Gimel farb Haralick and Roska the volume contains 114 contributions either presented as lectures or posters and carefully selected by a highly competent international program committee from a total of some 230 submissions thus the book gives a thorough survey on recent research results and their applications in image processing and pattern recognition The proceedings is organized in 20 sections for example on image data structures image processing edges and contours Hough transforms and related methods shape motion 3 D vision character recognition and document processing biomedical applications industrial applications and neural networks 1994 Space and Earth Science Data Compression Workshop James Charles Tilton, 1994 **Digital Image Processing Techniques** Michael P.

Ekstrom, 2012-12-02 Digital Image Processing Techniques is a state of the art review of digital image processing techniques with emphasis on the processing approaches and their associated algorithms A canonical set of image processing problems that represent the class of functions typically required in most image processing applications is presented Each chapter broadly addresses the problem being considered the best techniques for this particular problem and how they work their strengths and limitations and how the techniques are actually implemented as well as their computational aspects Comprised of eight chapters this volume begins with a discussion on processing techniques associated with the following tasks image enhancement restoration detection and estimation reconstruction and analysis along with image data compression and image spectral estimation The second section describes hardware and software systems for digital image processing Aspects of commercially available systems that combine both processing and display functions are considered as are future prospects for their technological and architectural evolution The specifics of system design trade offs are explicitly presented in detail This book will be of interest to students practitioners and researchers in various disciplines including digital signal processing computer science statistical communications theory control systems and applied physics *Computer Analysis of Images and Patterns* Franc Solina, Ales Leonardis, 2003-07-31 This volume presents the articles accepted for the 8th

International Conference on Computer Analysis of Images and Patterns CAIP 99 held in Ljubljana Slovenia 13 September 1999 The CAIP series of conferences started 14 years ago in Berlin The series served initially as a forum for meetings between scientists from Western and Eastern bloc countries Political circumstances have changed dramatically since the inception of the conference and such contacts are fortunately no longer subject to abstruse While CAIP conferences are still rooted in Central Europe they now attract participants from all over the world We received 120 submissions which went through a thorough double blind review process by the program committee members who had the option of signing additional reviewers The final program consists of 47 oral and 27 poster presentations with authors from 25 different countries The proceedings also include 2 of the 5 invited lectures given at the conference In the name of the steering committee we would like to thank the program committee members and the additional reviewers for their time and efforts Our thanks also go to the authors for their cooperation and meeting of all deadlines

Image Technology Jorge L.C. Sanz, 2012-12-06

Image processing and machine vision are fields of renewed interest in the commercial market People in industry managers and technical engineers are looking for new technologies to move into the market Many of the most promising developments are taking place in the field of image processing and its applications The book offers a broad coverage of advances in a range of topics in image processing and machine vision

Time-Varying Image Processing and Moving Object Recognition

V. Cappellini, 2013-10-22 In the area of Digital Image Processing the new area of Time Varying Image Processing and Moving Object Recognition is contributing to impressive advances in several fields Presented in this volume are new digital image processing and recognition methods implementation techniques and advanced applications such as television remote sensing biomedicine traffic inspection and robotics New approaches such as digital transforms neural networks for solving 2D and 3D problems are described Many papers concentrate on motion estimation and recognition i.e. tracking of moving objects Overall the book describes the state of the art theory implementation applications of this developing area together with future trends The work will be of interest not only to researchers professors and students in university departments of engineering communications computers and automatic control but also to engineers and managers of industries concerned with computer vision manufacturing automation robotics and quality control

Introduction to Data Compression Khalid

Sayood, 2012-10-16 Mathematical preliminaries for lossless compression Huffman coding Arithmetic coding Dictionary techniques Context based compression Lossless image compression Mathematical preliminaries for lossy coding Scalar quantization Vector quantization Differential encoding Mathematical preliminaries for transforms subbands and wavelets Transform coding Subband coding Wavelets Wavelet based image compression Audio coding Analysis synthesis and analysis by synthesis schemes Video compression Probability and random processes A brief review of matrix concepts The root lattices

Data Compression in Spectroscopy Joseph Dubrovkin, 2022-07-21 This book summarizes studies and major materials on data compression methods in analytical spectroscopy including some important topics on imaging Its rigorous

mathematical basis in depth detailed description and numerous examples of the applications in chemistry and physics will be of value for theorists practitioners and students specializing in spectroscopy chemometrics and analytical chemistry This text differs from existing brief reviews and articles on this topic in that it forms for the first time an overview of all kinds of compression methods in spectroscopy In addition it provides quickly reproducible computer calculations illustrating its significant theoretical statements As such it can also serve as a practical guide to lecturers in spectroscopy chemometrics and analytical chemistry

Image Quality and System Performance ,2004 *Encyclopedia of Microcomputers* Allen Kent,James G. Williams,1994-05-12 The Encyclopedia of Microcomputers serves as the ideal companion reference to the popular Encyclopedia of Computer Science and Technology Now in its 10th year of publication this timely reference work details the broad spectrum of microcomputer technology including microcomputer history explains and illustrates the use of microcomputers throughout academe business government and society in general and assesses the future impact of this rapidly changing technology

Satellite Data Compression Bormin Huang,2011-11-25 Satellite Data Compression covers recent progress in compression techniques for multispectral hyperspectral and ultra spectral data A survey of recent advances in the fields of satellite communications remote sensing and geographical information systems is included Satellite Data Compression contributed by leaders in this field is the first book available on satellite data compression It covers onboard compression methodology and hardware developments in several space agencies Case studies are presented on recent advances in satellite data compression techniques via various prediction based lookup table based transform based clustering based and projection based approaches This book provides valuable information on state of the art satellite data compression technologies for professionals and students who are interested in this topic Satellite Data Compression is designed for a professional audience comprised of computer scientists working in satellite communications sensor system design remote sensing data receiving airborne imaging and geographical information systems GIS Advanced level students and academic researchers will also benefit from this book

Handbook of Image Engineering Yu-Jin Zhang,2021-01-04 Image techniques have been developed and implemented for various purposes and image engineering IE is a rapidly evolving integrated discipline comprising the study of all the different branches of image techniques and encompassing mathematics physics biology physiology psychology electrical engineering computer science and automation Advances in the field are also closely related to the development of telecommunications biomedical engineering remote sensing surveying and mapping as well as document processing and industrial applications IE involves three related and partially overlapping groups of image techniques image processing IP in its narrow sense image analysis IA and image understanding IU and the integration of these three groups makes the discipline of image engineering an important part of the modern information era This is the first handbook on image engineering and provides a well structured comprehensive overview of this new discipline It also offers detailed information on the various image techniques It is a valuable reference resource for R D professional and

undergraduate students involved in image related activities Computer Analysis of Images and Patterns ,1993
 Advances in Electronics and Electron Physics ,1994-05-18 Advances in Electronics and Electron Physics **Recursive**
Block Coding Techniques for Data Compression Paul Michael Farrelle,1982

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resulting condensation of water is recovered as low temperature heat cooling of the flue gas can be performed either directly with a heat exchanger or indirectly via a condensing scrubber

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