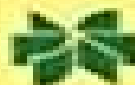


# **RATE-QUALITY OPTIMIZED VIDEO CODING**

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**Yoo-Sok Saw**



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# Rate Quality Optimized Video Coding The International Series In Engineering And Computer Science

**Yoo-Sok Saw**



## **Rate Quality Optimized Video Coding The International Series In Engineering And Computer Science:**

Rate-Quality Optimized Video Coding Yoo-Sok Saw, 2012-12-06 Rate Quality Optimized Video Coding discusses the matter of optimizing or negotiating the data rate of compressed digital video and its quality which has been a relatively neglected topic in either side of image video coding and tele traffic management Video rate management becomes a technically challenging task since it is required to maintain a certain video quality regardless of the availability of transmission or storage media This is caused by the broadband nature of digital video and inherent algorithmic features of mainstream video compression schemes e g H 261 H 263 and MPEG series In order to maximize the media utilization and to enhance video quality the data rate of compressed video should be regulated within a budget of available media resources while maintaining the video quality as high as possible In Part I Chapters 1 to 4 the non stationarity of digital video is discussed Since the non stationary nature is also inherited from algorithmic properties of international video coding standards which are a combination of statistical coding techniques the video rate management techniques of these standards are explored Although there is a series of known video rate control techniques such as picture rate variation frame dropping etc these techniques do not view the matter as an optimization between rate and quality From the view of rate quality optimization the quantizer is the sole means of controlling rate and quality Thus quantizers and quantizer control techniques are analyzed based on the relationship of rate and quality In Part II Chapters 5 and 6 as a coherent approach to non stationary video established but still thriving nonlinear techniques are applied to video rate quality optimization such as artificial neural networks including radical basis function networks and fuzzy logic based schemes Conventional linear techniques are also described before the nonlinear techniques are explored By using these nonlinear techniques it is shown how they influence and tackle the rate quality optimization problem Finally in Chapter 7 rate quality optimization issues are reviewed in emerging video communication applications such as video transcoding and mobile video This chapter discusses some new issues and prospects of rate and quality control in those technology areas Rate Quality Optimized Video Coding is an excellent reference and can be used for advanced courses on the topic

**International e-Conference of Computer Science 2006** Theodore Simos, Georgios Psihoyios, 2007-04-30 Lecture Series on Computer and on Computational Sciences LSCCS aims to provide a medium for the publication of new results and developments of high level research and education in the field of computer and computational science In this series only selected proceedings of conferences in all areas of computer science and computational sciences will

*Emerging Research in Electronics, Computer Science and Technology* V Sridhar, Holalu Seenappa Sheshadri, M C Padma, 2013-09-13 PES College of Engineering is organizing an International Conference on Emerging Research in Electronics Computer Science and Technology ICERECT 12 in Mandya and merging the event with Golden Jubilee of the Institute The Proceedings of the Conference presents high quality peer reviewed articles from the field of Electronics Computer Science and Technology The book is a compilation of research papers from the cutting edge

technologies and it is targeted towards the scientific community actively involved in research activities      **Intelligent Image and Video Compression** David Bull,Fan Zhang,2021-04-07 Intelligent Image and Video Compression Communicating Pictures Second Edition explains the requirements analysis design and application of a modern video coding system It draws on the authors extensive academic and professional experience in this field to deliver a text that is algorithmically rigorous yet accessible relevant to modern standards and practical It builds on a thorough grounding in mathematical foundations and visual perception to demonstrate how modern image and video compression methods can be designed to meet the rate quality performance levels demanded by today s applications and users in the context of prevailing network constraints David Bull and Fan Zhang have written a timely and accessible book on the topic of image and video compression Compression of visual signals is one of the great technological achievements of modern times and has made possible the great successes of streaming and social media and digital cinema Their book Intelligent Image and Video Compression covers all the salient topics ranging over visual perception information theory bandpass transform theory motion estimation and prediction lossy and lossless compression and of course the compression standards from MPEG ranging from H 261 through the most modern H 266 or VVC and the open standards VP9 and AV 1 The book is replete with clear explanations and figures including color where appropriate making it quite accessible and valuable to the advanced student as well as the expert practitioner The book offers an excellent glossary and as a bonus a set of tutorial problems Highly recommended Al Bovik An approach that combines algorithmic rigor with practical implementation using numerous worked examples Explains how video compression methods exploit statistical redundancies natural correlations and knowledge of human perception to improve performance Uses contemporary video coding standards AVC HEVC and VVC as a vehicle for explaining block based compression Provides broad coverage of important topics such as visual quality assessment and video streaming      **American Book Publishing Record** ,1999      Advances in Computer Science and Engineering Hamid Sarbazi-Azad,Behrooz Parhami,Seyed-Ghasem Miremadi,Shaahin Hessabi,2008-11-23 It is our pleasure to welcome you to the proceedings of the 13th International Computer Society of Iran Computer Conference CSICC 2008 The conference has been held annually since 1995 except for 1998 when it transitioned from a year end to first quarter schedule It has been moving in the direction of greater selectivity see Fig 1 and broader international participation Holding it in Kish Island this year represents an effort to further facilitate and encourage international contributions We feel privileged to participate in further advancing this strong technical tradition 60 50 40 30 20 10 0 Dec 23 26 Dec 23 25 Dec 23 25 Jan 26 28 Mar 8 10 Feb 21 23 Feb 28 30 Feb 23 26 Feb 16 19 Feb 15 18 Jan 24 26 Feb 20 22 Mar 9 11 1995 1996 1997 Iran 1999 2000 2001 U of 2002 Iran 2003 2004 2005 Iran 2006 IPM 2007 2008 Sharif U Amirkabir U of Sharif U Shahid Isfahan Telecom Ferdowsi Sharif U Telecom Tehran Shahid Sharif U of Tech U of Tech Sci Tech of Tech Beheshti Isfahan Res U of Tech Res Beheshti of Tech Tehran Tehran Tehran Tehran U Tehran Center Mashhad Tehran Center U Tehran Kish Island Dates Year

Venue     **International Conference on Neural Computing for Advanced Applications** Haijun Zhang, Yinggen Ke, Zhou Wu, Tianyong Hao, Zhao Zhang, Weizhi Meng, Yuanyuan Mu, 2023-08-30 The two volume set CCIS 1869 and 1870 constitutes the refereed proceedings of the 4th International Conference on Neural Computing for Advanced Applications NCAA 2023 held in Hefei China in July 2023 The 83 full papers and 1 short paper presented in these proceedings were carefully reviewed and selected from 211 submissions The papers have been organized in the following topical sections Neural network NN theory NN based control systems neuro system integration and engineering applications Machine learning and deep learning for data mining and data driven applications Computational intelligence nature inspired optimizers and their engineering applications Deep learning driven pattern recognition computer vision and its industrial applications Natural language processing knowledge graphs recommender systems and their applications Neural computing based fault diagnosis and forecasting prognostic management and cyber physical system security Sequence learning for spreading dynamics forecasting and intelligent techniques against epidemic spreading 2 Applications of Data Mining Machine Learning and Neural Computing in Language Studies Computational intelligent Fault Diagnosis and Fault Tolerant Control and Their Engineering Applications and Other Neural computing related topics     *Communications and Networking* Honghao Gao, Jun Wun, Jianwei Yin, Feifei Shen, Yulong Shen, Jun Yu, 2022-04-04 This proceedings constitutes the refereed proceedings of the 16th International Conference on Communications and Networking ChinaCom 2021 held in November 2021 Due to COVID 19 pandemic the conference was held virtually The 47 full papers and 5 workshop papers presented were carefully selected from 130 submissions The papers are organized in topical sections on Scheduling and Transmission Optimization in Edge Computing Complex System Optimization in Edge Computing Network Communication Enhancement Signal Processing and Communication Optimization Deep Learning and Vehicular Communication Edge Computing and Deep Learning Finite Blocklength and Distributed Machine Learning Deep Learning and Network Performance Optimization Edge Computing and Reinforcement Learning     *2014 International Conference on Artificial Intelligence and Software Engineering(AISE2014)* S. K. Chen, Altair Engineering Inc., California, USA, Y. H. Chang, Chihlee Institute of Technology, Taiwan, 2014-02-06 2014 International Conference on Artificial Intelligence and Software Engineering AISE2014 aims to provide a forum for accessing to the most up to date and authoritative knowledge from both Artificial Intelligence and Software Engineering AISE2014 features unique mixed topics of AI Algorithms Data Mining Knowledge based Systems Software Process and so on The goal of this conference is to bring researchers engineers and students to the areas of Artificial Intelligence and Software Engineering to share experiences and original research contributions on those topics Researchers and practitioners are invited to submit their contributions to AISE2014     **Streaming Media with Peer-to-Peer Networks: Wireless Perspectives** Fleury, Martin, 2012-05-31 The number of users who rely on the Internet to deliver multimedia content has grown significantly in recent years As this consumer demand grows so too does our dependency on a wireless and streaming

infrastructure which delivers videos podcasts and other multimedia Streaming Media with Peer to Peer Networks Wireless Perspectives offers insights into current and future communication technologies for a converged Internet that promises soon to be dominated by multimedia applications at least in terms of bandwidth consumption The book will be of interest to industry managers and will also serve as a valuable resource to students and researchers looking to grasp the dynamic issues surrounding video streaming and wireless network development

**Advances in Visual Computing** Richard Boyle, Bahram Parvin, Darko Koracin, Fatih Porikli, Jörg Peters, James Klosowski, Laura Arns, Yu Ka Chun, Theresa-Marie Rhyne, Laura Monroe, 2008-12-03 It is with great pleasure that we present the proceedings of the 4th International Symposium on Visual Computing ISVC 2008 in Las Vegas Nevada ISVC offers a common umbrella for the four main areas of visual computing including vision graphics visualization and virtual reality Its goal is to provide a forum for researchers scientists engineers and practitioners throughout the world to present their latest research findings ideas developments and applications in the broader area of visual computing This year ISVC grew significantly the program consisted of 15 oral sessions 1 poster session 8 special tracks and 6 keynote presentations The response to the call for papers was very strong we received over 340 submissions for the main symposium from which we accepted 102 papers for oral presentation and 70 papers for poster presentation Special track papers were solicited separately through the Organizing and Program Committees of each track A total of 56 papers were accepted for oral presentation and 8 papers for poster presentation in the special tracks All papers were reviewed with an emphasis on potential to contribute to the state of the art in the field Selection criteria included accuracy and originality of ideas clarity and significance of results and presentation quality The review process was quite rigorous involving two to three independent blind reviews followed by several days of discussion During the discussion period we tried to correct anomalies and errors that might have existed in the initial reviews

Computer Analysis of Images and Patterns Nicolai Petkov, 2003-08-14 This book constitutes the refereed proceedings of the 10th International Conference on Computer Analysis of Images and Patterns CAIP 2003 held in Groningen The Netherlands in August 2003 The 94 revised papers presented were carefully reviewed and selected from 160 submissions The papers are organized in topical sections on analysis and understanding video analysis segmentation shape classification face recognition interpolation and spatial transformations and filtering

*International Journal of Computer Systems Science & Engineering*, 2003

Advanced Research on Computer Science and Information Engineering Gang Shen, Xiong Huang, 2011-05-09 This two volume set CCIS 152 and CCIS 153 constitutes the refereed proceedings of the International Conference on Computer Science and Information Engineering CSIE 2011 held in Zhengzhou China in May 2011 The 159 revised full papers presented in both volumes were carefully reviewed and selected from a large number of submissions The papers present original research results that are broadly relevant to the theory and applications of Computer Science and Information Engineering and address a wide variety of topics such as algorithms automation artificial intelligence bioinformatics computer networks

computer security computer vision modeling and simulation databases data mining e learning e commerce e business image processing knowledge management multimedia mobile computing natural computing open and innovative education pattern recognition parallel computing robotics wireless networks and Web applications     Greening Video Distribution Networks Adrian Popescu, 2018-01-29 This insightful text presents a guide to video distribution networks VDNs providing illuminating perspectives on reducing power consumption in IP based video networks from an authoritative selection of experts in the field A particular focus is provided on aspects of architectures models Internet protocol television IPTV over the top OTT video content video on demand VoD encoding and decoding mobile terminals wireless multimedia sensor networks WMSNs software defined networking SDN and techno economic issues Topics and features reviews the fundamentals of video over IP distribution systems and the trade offs between network service performance and energy efficiency in VDNs describes the characterization of the main elements in a video distribution chain and techniques to decrease energy consumption in software based VoD encoding introduces an approach to reduce power consumption in mobile terminals during video playback and in data center networks using the SDN paradigm discusses the strengths and limitations of different methods for measuring the energy consumption of mobile devices proposes optimization methods to improve the energy efficiency of WMSNs and a routing algorithm that reduces energy consumption while maintaining the bandwidth presents an economic analysis of the savings yielded by approaches to minimize energy consumption of IPTV and OTT video content services The broad coverage and practical insights offered in this timely volume will be of great value to all researchers practitioners and students involved with computer and telecommunication systems     *Image and Signal Processing* Abderrahim El Moataz, Driss Mammas, Alamin Mansouri, Fathallah Nouboud, 2020-07-08 This volume constitutes the refereed proceedings of the 9th International Conference on Image and Signal Processing ICISP 2020 which was due to be held in Marrakesh Morocco in June 2020 The conference was cancelled due to the COVID 19 pandemic The 40 revised full papers were carefully reviewed and selected from 84 submissions The contributions presented in this volume were organized in the following topical sections digital cultural heritage data and image processing for precision agriculture machine learning application and innovation biomedical imaging deep learning and applications pattern recognition segmentation and retrieval mathematical imaging signal processing     Proceedings, International Conference on Image Processing, 1995     *Cloud Computing and Security* Xingming Sun, Han-Chieh Chao, Xingang You, Elisa Bertino, 2017-10-31 This two volume set LNCS 10602 and LNCS 10603 constitutes the thoroughly refereed post conference proceedings of the Third International Conference on Cloud Computing and Security ICCCS 2017 held in Nanjing China in June 2017 The 116 full papers and 11 short papers of these volumes were carefully reviewed and selected from 391 submissions The papers are organized in topical sections such as information hiding cloud computing IOT applications information security multimedia applications optimization and classification     **Video coding standards** K.R. Rao, Do Nyeon Kim, Jae Jeong Hwang, 2013-10-07 The

requirements for multimedia especially video and audio communications increase rapidly in the last two decades in broad areas such as television entertainment interactive services telecommunications conference medicine security business traffic defense and banking Video and audio coding standards play most important roles in multimedia communications In order to meet these requirements series of video and audio coding standards have been developed such as MPEG 2 MPEG 4 MPEG 21 for audio and video by ISO IEC H 26x for video and G 72x for audio by ITU T Video Coder 1 VC 1 for video by the Society of Motion Picture and Television Engineers SMPTE and RealVideo RV 9 for video by Real Networks AVS China is the abbreviation for Audio Video Coding Standard of China This new standard includes four main technical areas which are systems video audio and digital copyright management DRM and some supporting documents such as consistency verification The second part of the standard known as AVS1 P2 Video Jizhun was approved as the national standard of China in 2006 and several final drafts of the standard have been completed including AVS1 P1 System Broadcast AVS1 P2 Video Zengqiang AVS1 P3 Audio Double track AVS1 P3 Audio 5 1 AVS1 P7 Mobile Video AVS S P2 Video and AVS S P3 Audio AVS China provides a technical solution for many applications such as digital broadcasting SDTV and HDTV high density storage media Internet streaming media and will be used in the domestic IPTV satellite and possibly the cable TV market Comparing with other coding standards such as H 264 AVC the advantages of AVS video standard include similar performance lower complexity lower implementation cost and licensing fees This standard has attracted great deal of attention from industries related to television multimedia communications and even chip manufacturing from around the world Also many well known companies have joined the AVS Group to be Full Members or Observing Members The 163 members of AVS Group include Texas Instruments TI Co Agilent Technologies Co Ltd Envivio Inc NDS Philips Research East Asia Aisino Corporation LG Alcatel Shanghai Bell Co Ltd Nokia China Investment NCIC Co Ltd Sony China Ltd and Toshiba China Co Ltd as well as some high level universities in China Thus there is a pressing need from the instructors students and engineers for a book dealing with the topic of AVS China and its performance comparisons with similar standards such as H 264 VC 1 and RV 9

**Mobile Multimedia Communications** Luigi Atzori, Jaime Delgado, Daniel Giusto, 2012-04-29 This book constitutes the thoroughly refereed post conference proceedings of the 7th International ICST Conference on Mobile Multimedia Communications MOBIMEDIA 2011 held in Cagliari Italy in September 2011 The 26 revised full papers presented were carefully selected from numerous submissions and focus topics such as quality of experience dynamic spectrum access wireless networks in the TV white spaces media streaming mobile visual search image processing and transmission and mobile applications

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