For further information see: www.cs.brandeis.edu/~dcc

PROGRAM

Data Compression Conference (DCC 2000)

(Sponsored by the IEEE Computer Society TCCC)

Snowbird, Utah
March 28 - 30, 2000

COMMITTEE:

J. Storer, Brandeis U. *(Conference Chair)*
M. Cohn, Brandeis U. (*Program Chair*)
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R. Arps (IBM)
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P. Chou (Microsoft)
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R. Gray (Stanford U.)
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A. Moffat (U. Melbourne)
M. Rabbani (Kodak)
K. Ramchandran (U. Illinois)
E. Riskin (U. Washington)
A. Rodriguez (Scientific Alanta)
S. Savari (Bell Labs / Lucent)
G. Sullivan (PictureTel)
J. Villasenor (UCLA)
M. Weinberger, (HP Labs)
I. Witten (U. Waikato)
K. Zeger (UC San Diego)

SCHEDULE OVERVIEW:

Monday Evening, March 27: Registration and Reception

Tuesday, March 28:

Morning: Technical Sessions
Mid-Day: Invited Presentation
Afternoon: Technical Sessions

Wednesday, March 29:

Morning: Technical Sessions
Mid-Day: Technical Sessions
Late Afternoon: Poster Session and Reception

Thursday, March 30:

Morning: Technical Sessions
Mid-Day: Technical Sessions

MONDAY EVENING

Registration / Reception, 7:00-10:00pm (Golden Cliff Room)

TUESDAY

Welcome: 7:45am

Session 1: 8:00am - 10:00am

8:00am
Group Testing for Image Compression
E.S. Hong, R.E.Ladner
University of Washington

8:20am
A Novel Code for Thin Client Computing
B.O.Christiansen, K.E.Schauser, M.Munke
University of California, Santa Barbara

8:40am
Low Complexity Scalable Image Compression
R.J. van der Vleuten, R.P. Kleihorst
Philips Research Laboratories

9:00am
Symbol dictionary design for the JBIG2 standard
Y.Ye, D.Schilling, P.Cosman, H.Ko
U. California at San Diego, Kwangwoon University

9:20am
The Skip-Innovation Model for Sparse Images
Paul J. Ausbeck Jr.
Caravian Software Designs

9:40am
Hard-Decision in COVQ Over Waveform Channels
J. L. Perez-Cordoba, A.J. Rubio, J.M. Lopez-Soler, M.Carmen Benitez
Universidad de Granada

Break: 10:00am - 10:20am

(TUESDAY CONTINUED)

Session 2: 10:20am - 12:20pm

10:20am
Lossless and Lossy Broadcast System Source Codes: Theoretical Limits, Optimal Design, and Empirical Performance
Q.Zhao, M.Effros
California Institute of Technology

10:40am
Joint Source/Channel Coding Using Arithmetic Codes
B.D.Pettijohn, K.Sayood, M.W.Hoffman
University of Nebraska

11:00am
Joint Source-Channel Soft Decoding of Huffman Codes with Turbo-Codes
L.Guivarch, J-C.Carlach, P.Siohan
France Telecom

11:20am
Iterative Source/Chanel-Decoding using Reversible Variable Length Codes
Rainer Bauer, Joachim Hagenauer
Munich University of Technology

11:40am
Channel Decoding Using Inter- and Intra-correlation of Source Encoded Frames
D. Veaux, P. Scalart, A. Gilloire
France Telecom CNET

12:00noon
Universal Finite Memory Machines for Coding Binary Sequences
C. Rajwan, M. Feder
Tel-Aviv University

Lunch Break: 12:20pm - 2:30pm

Mid-Day Invited Presentation: 2:30pm - 3:30pm

"The JPEG2000 Standard"
M. Gormish and M. Marcellin
Ricoh, U. Arizona

Break: 3:30pm - 4:00pm

(TUESDAY CONTINUED)

Session 3: 4:00pm - 5:40pm

4:00pm
Implementing the Context Tree Weighting Method for Text Compression
K.Sadakane, T.Okazaki, H.Imai
University of Tokyo

4:20pm
Text Compression Based on Variable-to-Fixed Codes
I Tabus, G Korodi, J Rissanen
Tampere University of Technology, IBM

4:40pm
Compression of Biological Sequences by Greedy Off-Line Textual Substitution
A. Apostolico, S. Lonardi
Purdue University, University of Padova

5:00pm
Prediction by Grammatical Match
J. M. Lake
North Carolina State University

5:20pm
On-line Decision Making for a Class of Loss Functions via Lempel-Ziv Parsing
M.J. Weinberger, E. Ordentlich
Hewlett Packard Laboratories, iCompression

Break: 5:40pm - 6:00pm

Session 4: 6:00pm - 7:20pm

6:00pm
On the Performance of BWT Sorting Algorithms
J. Seward
Microsoft Research Ltd.

6:20pm
Switching Between Two On-Line List Update Algorithms for Higher Compression of Burrows-Wheeler Transformed Data
B.Chapin
University of North Texas

6:40pm
Move-to-Front and Inversion Coding
Z Arnavut
Suny Fredonia

7:00pm
PPM Performance with BWT Complexity: A New Method for Lossless Data Compression
Michelle Effros
California Institute of Technology

WEDNESDAY

Session 5: 8:00am - 10:00am

8:00am
A New Method for Optimal Rate Allocation for Progressive Image Transmission Over Noisy Channels
M. Zhao, A.Aydin Alatan, A.N. Akansu
New Jersey Institute of Technology

8:20am
Optimal Subtractive Dither for Near-Lossless Compression
M. Klimesh
JPL / California Institute of Technology

8:40am
Content Layer Progressive Coding of Digital Maps
S. Forchhammer, O. Jensen
Technical University of Denmark

9:00am
Fast Progressive Image Coding without Wavelets
H.S. Malvar
Microsoft Research

9:20am
Compression of Lumigraph with Multiple Reference Frame (MRF) Prediction and Just-In-Time Rendering
C. Zhang, J. Li
Tsinghua University, Microsoft Research, China

9:40am
Complexity-Scalable Transform Coding using Variable Complexity Algorithms
Wendi Pan, Antonio Ortega
University of Southern California

Break: 10:00am - 10:20am

(WEDNESDAY CONTINUED)

Session 6: 10:20am - 12:20pm

10:20am
What's Your Sign?: Efficient Sign Coding for Embedded Wavelet Image Coding
A. Deever, S. Hemami
Cornell University

10:40am
Trees, Windows, and Tiles for Wavelet Image Compression
W.S. Lee
National University of Singapore

11:00am
Modifications Of Uniform Quantization Applied in Wavelet Coder
A. Przelaskowski
Warsaw Institute of Technology

11:20am
Multi-Resolution Adaptation of the SPIHT Algorithm for Multiple Description
N.Varnica, M.Fleming, M.Effros
University of Belgrade, California Institute of Technology

11:40am
SPIHT-NC: Network-Conscious Zerotree Encoding
S. Iren, P.D. Amer
GTE Laboratories Incorporated, University of Delaware

12:00noon:
Analysis of Optimal Filter Banks for Multiple Description Coding
P.Dragotti, S.Servetto, M.Vetterli
Swiss Federal Institute of Technology, University of California at Berkeley

Lunch Break: 12:20pm - 2:00pm

(WEDNESDAY CONTINUED)

Session 7: 2:00pm - 3:40pm

2:00pm
Rate Distortion Behavior of Threshold-Based Nonlinear Approximations
C. Weidmann, M. Vetterli
Swiss Federal Institute of Technology, University of California at Berkeley

2:20pm
Single-Bit Oversampled A/D Conversion with Exponential Accuracy in the Bit-Rate
Z. Cvetkovic, I. Daubechies
AT&T Shannon Laboratory, Princeton University

2:40pm
A Measure of Information
M. Titchener
University of Auckland

3:00pm
Distributed Source Coding: Symmetric Rates and Applications to Sensor Networks
S.Pradhan, K.Ramchandran
Univiversity of California at Berkeley

3:20pm
On the Average Redundancy Rate of the Lempel-Ziv Code with K-Error Protocol
Y. Reznik, W. Szpankowski
RealNetworks, Inc., Purdue University

POSTER SESSION AND RECEPTION

4:30-7:30pm
In the Golden Cliff Room

(Titles are listed later in this program; abstracts of each presentation appear in the proceedings.)

THURSDAY

Session 8: 8:00am - 10:00am

8:00am
Parallel Huffman Decoding
S. Klein, Y. Wiseman
Bar Ilan University, Jordan Valley College, Jerusalem College of Technology

8:20am
Work-Optimal Parallel Decoders for LZ2 Data Compression
S. De Agostino
Universitá di Roma "La Sapienza"

8:40am
A New Compression Method for Compressed Matching
S. Klein, D. Shapira
Bar-Ilan University, College of Judea and Samaria

9:00am
Piecewise Linear Image Coding Using Surface Triangulation and Geometric Compression
T.Lu, Z.Le, D.Y.Y.Yun
University of Hawaii at Manoa

9:20am
Summary Structures for Frequency Queries on Large Transaction Sets
D-Y Yang, A. Johar, A. Grama, W. Szpankowski
Purdue University

9:40am
Arithmetic Coding for Low Power Embedded System Design
H. Lekatsas, J.Henkel, W.Wolf,
Princeton University, NEC USA

Break: 10:00am - 10:20am

(THURSDAY CONTINUED)

Session 9: 10:20am - 11:40pm

10:20am
FEC and Pseudo-ARQ for Receiver-Driven Layered Multicast of Audio and Video
P.A.Chou, A.Mohr, A.Wang, S.Mehrotra
Microsoft Corporation, University of Washington at Seattle, Stanford University

10:40am
Robust Video Coding for Packet Networks with Feedback
R.Zhang, S.L.Regunathan, K.Rose
University of California at Santa Barbara

11:00am
Data Partitioning and Reversible Variable Length Codes for Robust Video Communications
A.H.Li, S.Kittitornkun, Y.Hu, D.Park, J.Villasenor
University of California at Los Angeles, University of Wisconsin at Madison, Samsung Electronics Company

11:20am
Improving Scene Cut Quality for Real-Time Video Decoding
G. Motta, J. A. Storer, B. Carpentieri
Brandeis University, University of Salerno

Break: 11:40am - 12:00noon

Session 10: 12:00noon - 1:20pm

12:00noon
Multiple Description Lattice Vector Quantization: Variations and Extensions
J. A. Kelner, V.K. Goyal, J. Kovacevic
Harvard University, Bell Labs, Lucent Technologies

12:20pm
Design of Asymmetric Multiple Description Lattice Vector Quantizers
S.N. Diggavi, N.J.A. Sloane, V.A. Vaishampayan
AT&T Shannon Laboratories

12:40pm
Universal Lattice-Based Quantizers for Multiple Descriptions
Y. Frank-Dayan, R. Zamir
Tel-Aviv University

1:00pm
Lattice Quantization with Side Information
S.Servetto
Swiss Federal Institute of Technology

Posters
(listed alphabetically by first author)

Notes on Learning Probabilistic Automata
A. Apostolico
Purdue University

Applications of YK Algorithm to the Internet Transmission of Web-Data: Implementation Issues and Modifications
A. Banerji, E-H Yang
Hughes Network Systems, University of Waterloo

Product Code and Recurrent Alternative Decoding for Wireless Image Transmission
L. Cao, C. W. Chen
University of Missouri-Columbia

Tree-based search for ECVQ
J. Cardinal
Brussels Free University

Adaptive Post-Processing for Region-Based Fractal Image Compression
Y. Chang, B.-K. Shyu, C.-Y. Cho, J.-S. Wang
National Tsinghua University

Statistical Models for Term Compression
J. Cheney
Cornell University

Wavelet Coding of 3-D Shape Data using Space-Frequency Quantization
D. Murata, T. Otake, A. Kawanaka
Sophia University

Seismic Data Compression using GENLOT: towards "optimality"?
L. C. Duval, V. Bui-Tran, T. Q. Nguyen, T. D. Tran
French Institute of Petroleum, Rueil-Malmaison Cedex, Boston University
The Johns Hopkins University

Some Notes on the Context Mapping Function in Lossless Data Compression
N. Ekstrand, B. Smeets
Lund University

QccPack: An Open-Source Software Library for Quantization, Compression, and Coding
J. Fowler
Mississippi State University

Text categorization using compression models
E. Frank, C .Chui, I.H. Witten
University of Waikato

PPM*-Style Context Sorting Compression Method Using a Prefix List
S. Itagaki, H. Yokoo
Gunma University

A modification to the Huffman coding of JPEG's baseline compression algorithm
G. Lakhani
Texas Tech University

Bit rate local quality control for on-board satellite images compression
D. LeGuen, S. Pateux, C. Labit, G. Moury, D. Lebedeff
IRISA, CNES, Alcatel Space Industrie

An Efficient Successive Elimination Algorithm For Block-Matching Motion Estimation
H. A. Mahmoud, M. Bayoumi
The University of Louisiana at Lafayette

An Efficient Low-Bit Rate Motion Compensation Technique Based on Quadtree
H. A. Mahmoud, M. Bayoumi
University of Louisiana at Lafayette

Semantic Progressive Transmission for Deep Space Communications
R. Manduchi, S. Dolinar, F.Pollara, A.Matache
California Institute of Technology

Protection of Regions of Interest Against Data Loss in a Generalized Multiple Description Framework
A. C. Miguel, E. A.Riskin
University of Washington

Distributed Internet-Adaptive Image Compression
K Mukherjee, A. Mukherjee, T. Acharya
University of Central Florida, Intel Corporation

A Spatially Coherent Discrete Wavelet Transform – Accessing the Localization Property for Data Compression
K. Mukherjee, A. Mukherjee
University of Central Florida

Data Compression with Truncated Suffix Trees
J. C. Na, K.. Park
Seoul National University

Decoding of Canonical Huffman Codes with Look-Up Tables
Y. Nekritch
University of Bonn

Coding of Image Residuals with Tailbiting Convolutional Codes and BCJR Decoding
M. Novak
Lund University

High Performance Lempel-Ziv Compression Using Optimized Longest String Paring and Adaptive Huffman Window Size
N. Rishe, A. Shaposhnikov, V. Vasilevsky, S-C Chen
Florida International University

Wireless Image Transmission Using Multiple Description Based Concatenated Codes
D.G. Sachs, R. Anand, K. Ramchandran
University of Ill. at Urbana-Champaign
University of California-Berkeley

Effect of Image Activity on Lossy and Lossless Coding Performance
S. Saha, R. Vemuri
University of California, Davis

On Zonal Morphological Approach to Natural Language Texts Processing
D. *V. Shlepakov, L. N. Shlepakov*

Institute of Mathematics
National Academy of Sciences of Ukraine

Compression of SMIL Documents
C-Y Teng
Nokia Mobile Phones

Variable-to-fixed length codes: A Geometrical Approach to Low-Complexity Source Codes
T. Tjalkens, F. Willems
Eindhoven University of Technology

Loseless Compression of High-Volume Numerical Data for Simulations
V. Engelson, D. Fritzson, P. Fritzson
Linkoping University

Exploiting Interframe Redundancies in the Lossless Compression of 3D Medical Images
S. Van Assche, D. De Rycke, W. Philips, I. Lemahieu
University of Ghent

RD-Optimization of Hierarchical Structured Adaptive Vector Quantization for Video Coding
M. Wagner, D. Saupe
Freiburg University, Leipzig University

A Three-Layer, Two Description Image Coder
F.W. Ware, J.D. Gibson
Texas A&M University, Southern Methodist University

Wavelet Based Lossy Compression of Turbulence Data
J. P. Wilson
University of Colorado

Compressed Domain Texture Classification from a Modified EZW Symbol Stream
B. Wilson, M.A. Bayoumi
University of Louisiana at Lafayette

Optimal Packetization of Embedded Bitstreams
X. Wu, Z. Xiong
Univ. of Western Ontario, Texas A&M University

Separate Source and Channel Rate Selection Video Over ATM
Y. Yang, S.S. Hemami
Cornell University

Using Compression to Identify Acronyms in Text
S. Yeates, D. Brainbridge, I. H. Witten
University of Waikato

Image Compression Using Lossless Coding on VQ Indexes
Y. Gong, M. K. H. Fan, C-M Huang
Georgia Institute of Technology
Sorenson Vision, Inc.