

PROCEEDINGS OF SPIE

***Satellite Data Compression,
Communication, and Processing IV***

**Bormin Huang
Roger W. Heymann
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Editors

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Contents

vii *Conference Committee*

ix *Introduction*

SESSION 1 **HYPERSENSPECTRAL AND ULTRASPECTRAL DATA COMPRESSION I**

7084 02 **Clusters versus FPGAs for spectral mixture analysis-based lossy hyperspectral data compression (Invited Paper) [7084-01]**
A. J. Plaza, Univ. of Extremadura (Spain)

7084 04 **Optimal granule ordering for lossless compression of ultraspectral sounder data (Invited Paper) [7084-03]**
J. Mielikainen, P. Toivanen, Univ. of Kuopio (Finland)

7084 05 **Interactive transmission of spectrally wavelet-transformed hyperspectral images [7084-04]**
J. L. Monteagudo-Pereira, J. Bartrina-Rapesta, F. Aulí-Llinàs, J. Serra-Sagristà, A. Zabala, X. Pons, Autonomous Univ. of Barcelona (Spain)

SESSION 2 **HYPERSENSPECTRAL AND ULTRASPECTRAL DATA COMPRESSION II**

7084 06 **Ultraspectral sounder data compression using the non-exhaustive Tunstall coding [7084-05]**
S.-C. Wei, Tamkang Univ. (Taiwan); B. Huang, Univ. of Wisconsin, Madison (United States)

7084 07 **Enhancement of resilience to bit-errors of compressed data on-board a hyperspectral satellite using forward error correction [7084-06]**
P. Zarrinkhat, S.-E. Qian, Canadian Space Agency (Canada)

7084 08 **Vector quantization with self-resynchronizing coding for lossless compression and rebroadcast of the NASA Geostationary Imaging Fourier Transform Spectrometer (GIFTS) data [7084-07]**
B. Huang, S.-C. Wei, H.-L. Huang, W. L. Smith, Univ. of Wisconsin, Madison (United States); H. J. Bloom, NOAA (United States)

SESSION 3 **SATELLITE IMAGE PROCESSING**

7084 09 **Unsupervised change detection for satellite images using dual-tree complex wavelet transform (Invited Paper) [7084-08]**
T. Celik, K.-K. Ma, Nanyang Technological Univ. (Singapore)

7084 0B **Unsupervised segmentation of hyperspectral images [7084-10]**
S. Lee, C. Lee, Yonsei Univ. (South Korea)

- 7084 0C **Hopfield neural network based mixed pixel unmixing for multispectral data** [7084-11]
S. Mei, Northwestern Polytechnical Univ. (China) and Univ. of Sydney (Australia); D. Feng, Univ. of Sydney (Australia) and Hong Kong Polytechnic Univ. (China); M. He, Northwestern Polytechnical Univ. (China)

SESSION 4 MULTISPECTRAL DATA COMPRESSION I

- 7084 0D **Lossless compression algorithm for multispectral imagers** [7084-12]
I. Gladkova, M. Grossberg, S. Gottipati, CCNY, NOAA/CREST (United States)
- 7084 0E **A new interferential multispectral image compression algorithm based on adaptive classification and curve-fitting** [7084-13]
K.-Y. Wang, Y.-S. Li, K. Liu, C.-K. Wu, Xidian Univ. (China)
- 7084 0F **CNES studies for on-board compression of high-resolution satellite images** [7084-14]
C. Thiebaut, CNES (France); X. Delaunay, CNES, TeSA, NOVELTIS (France); C. Latry, G. Moury, CNES (France)
- 7084 0G **Compression of the interferential multispectral image based on distributed source coding** [7084-15]
J. Song, Y. Li, C. Wu, Y. Feng, Xidian Univ. (China)

SESSION 5 DATA COMMUNICATION, DISTRIBUTION, AND ANALYSIS

- 7084 0H **Grid-optimized Web 3D applications on wide area network (Invited Paper)** [7084-16]
F. Wang, Cambridge-Cranfield High Performance Computing Facility (United Kingdom); N. Helian, Univ. of Hertfordshire (United Kingdom); L. Meng, Wuhan Univ. (China); S. Wu, Cambridge-Cranfield High Performance Computing Facility (United Kingdom); W. Zhang, Wuhan Univ. (China); Y. Guo, Imperial College (United Kingdom); M. A. Parker, Cambridge Univ. (United Kingdom)
- 7084 0I **Image compression effects in visual analysis** [7084-18]
A. Zabala, X. Pons, F. Aulí-Llinàs, J. Serra-Sagristà, Univ. Autònoma de Barcelona (Spain)
- 7084 0J **An analysis of the information dependence between MODIS emissive bands** [7084-19]
S. Gottipati, I. Gladkova, M. Grossberg, CCNY, NOAA/CREST (United States)

SESSION 6 MULTISPECTRAL DATA COMPRESSION II

- 7084 0K **Hyperspectral image lossless compression algorithm based on error compensated prediction tree of multi-band prediction (Invited Paper)** [7084-20]
L. Wang, S. Guo, L. Gu, R. Ren, Jilin Univ. (China)
- 7084 0M **Coding scheme with skip mode based on motion filed detection for DVC (Invited Paper)** [7084-22]
Y. Feng, Y. Li, C. Wu, R. Song, Xidian Univ. (China)

SESSION 7 DATA COMPRESSION

- 7084 0O **A new pipelined VLSI architecture for JPEG-LS compression algorithm** [7084-24]
J. Lei, Y. Li, F. Kong, C. Wu, Xidian Univ. (China)
- 7084 0P **Onboard data compression of synthetic aperture radar data: status and prospects**
[7084-25]
M. A. Klimesh, B. Moision, Jet Propulsion Lab. (United States)
- 7084 0Q **Effects comparison of JPEG2000 and JPEG compression on the accuracy of digital terrain models (DTM) automatically derived from digital aerial images** [7084-26]
Y. Wang, X. Hu, Xi'an Research Institute of Surveying and Mapping (China); Y. Li, Xidian Univ. (China); R. Niu, Xi'an Research Institute of Surveying and Mapping (China); S. Li, Harbin Institute of Technology (China)
- 7084 0R **Interferential multi-spectral image compression based on distributed source coding**
[7084-27]
X. Wu, Y. Li, C. Wu, F. Kong, Xidian Univ. (China)

Author Index

Conference Committee

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Session Chairs

- 1 Hyperspectral and Ultraspectral Data Compression I
Kai-Kuang Ma, Nanyang Technological University (Singapore)
- 2 Hyperspectral and Ultraspectral Data Compression II
Jarno S. Mielikäinen, University of Kuopio (Finland)
- 3 Satellite Image Processing
Antonio J. Plaza, Universidad de Extremadura (Spain)
- 4 Multispectral Data Compression I
Shih-Chieh Wei, Tamkang University (Taiwan)
- 5 Data Communication, Distribution, and Analysis
Matthew A. Klimesh, Jet Propulsion Laboratory (United States)
- 6 Multispectral Data Compression II
Chulhee Lee, Yonsei University (Korea, Republic of)
- 7 Data Compression
Mingyi He, Northwestern Polytechnical University (China)

Introduction

The papers in this volume are the manuscripts behind presentations made at SPIE's annual meeting, SPIE Optics + Photonics 2008, held 10-14 August 2008 in San Diego, California, USA. These papers and their presentations constitute SPIE conference 7084 on Satellite Data Compression, Communication, and Processing IV, held 10-11 August 2008. This is the fourth year of this essential, dedicated Earth science satellite remote sensing data compression and processing conference.

The conference brought together researchers, engineers, and administrators involved in observation and analysis of the Earth's environmental data from satellites. Participants included members of the civilian Earth and space community from around the globe. Presentations and papers were submitted from participants from Canada, China, Finland, France, Germany, Singapore, South Korea, Spain, Taiwan, the United Kingdom, and the United States of America.

The conference at its inception in 2005 had been dealing with technical issues associated with emerging environmental satellite sensor data volume. Data compression is an essential tool to manage data volume, which must share the limited radio frequency bandwidth as it is transmitted from the satellite. Data compression also has an important role in distribution and archiving. Because the requirements on the satellite data end use and the characteristics of the data vary, a wide range of different data compression schemes are considered. For some applications such as transmission over a satellite communication system, which by its nature is noisy, error correction is essential; for other applications, the algorithm throughput or compression rate are more important. This has driven an effort to evaluate and develop open algorithms that can be shared globally.

A lesson that can be drawn from the diverse presentations at this conference is that the heterogeneous nature of satellite sensor data characteristics (statistics) and the variety of end uses (requirements) has led to the realization that available generic compression algorithms are insufficient. By collecting a wide range of novel and creative approaches to satellite data compression, this volume of the associated conference is aimed at advocating a broad and global dialog that allows us to find or develop better tools for this new challenge.

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