

# **International Broadcasting Convention (IBC 2014)**

**Amsterdam, The Netherlands  
4 – 9 September 2014**

**ISBN: 978-1-5108-3935-9**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2014) by the Institution of Engineering and Technology  
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institution of Engineering and Technology  
at the address below.

Institution of Engineering and Technology  
P. O. Box 96  
Stevenage, Hertfordshire  
U.K. SG1 2SD

Phone: 01-441-438-767-328-328  
Fax: 01-441-438-767-328-375

[www.theiet.org](http://www.theiet.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

|   |     |
|---|-----|
| <b>AUTOMATED CONTENT RESTORATION SYSTEM FOR FILE-BASED BROADCASTING ENVIRONMENTS .....</b>  | 1   |
| <i>Sungwoo Choi, Moonsik Lee, Byunghee Jung, Kiok Ahn, Byeongyong Ryu, Jaemyun Kim, Oksam Chae</i>  |     |
| <b>AN AUTOMATED TAGGING APPROACH TO IMPROVE SEARCH AND RETRIEVAL IN A RADIO ARCHIVE .....</b>   | 12  |
| <i>M. Lycke, M. Matton, L. Overmeire</i>  |     |
| <b>BEYOND METADATA: SEARCHING YOUR ARCHIVE BASED ON ITS AUDIO-VISUAL CONTENT .....</b>  | 25  |
| <i>T. Tommasi, R. Aly, K. McGuinness, K. Chatfield, R. Arandjelovic, O. Parkhi, R. Ordelman, A. Zisserman, T. Tuytelaaers</i>                                   |     |
| <b>THE ART OF BETTER PIXELS .....</b>   | 33  |
| <i>D. G. Brooks</i>   |     |
| <b>SUBJECTIVE QUALITY EVALUATION OF HIGH DYNAMIC RANGE VIDEO AND DISPLAY FOR FUTURE TV .....</b>  | 43  |
| <i>P. Hanhart, P. Korshunov, T. Ebrahimi, Y. Thomas, H. Hoffmann</i>  |     |
| <b>HIGH DYNAMIC RANGE VIDEO CHAINS .....</b>  | 50  |
| <i>E. Reinhard, E. François, R. Boitard, C. Chamaret, C. Serré, T. Pouli</i>  |     |
| <b>DVB-T2 LITE: EXPLOITING BROADCAST HDTV NETWORKS FOR SERVICES TO MOBILE RECEIVERS .....</b>   | 61  |
| <i>G. Alberico, A. Bertella, S. Ripamonti, M. Tabone</i>  |     |
| <b>NEW WAYS TO MEET VIDEO CONTENT GROWTH ON FIXED AND MOBILE NETWORKS .....</b>   | 69  |
| <i>G. Mills, N. Wells, A. Dumbreck</i>  |     |
| <b>HYBRID BROADCAST AND OTT DELIVERY FOR TERRESTRIAL AND MOBILE TV SERVICES .....</b>   | 77  |
| <i>T. Stockhammer</i>   |     |
| <b>PERSONALIZED AND IMMERSIVE BROADCAST AUDIO .....</b>   | 85  |
| <i>S. Mehta and T. Ziegler</i>  |     |
| <b>MPEG-H 3D AUDIO - THE NEXT GENERATION AUDIO SYSTEM .....</b>   | 94  |
| <i>S. Meltzer, M. Neuendorf, D. Sen, P. Jax</i>   |     |
| <b>GESTURE INTERACTION WITH A BUBBLE USER INTERFACE: ENHANCING THE USER EXPERIENCE .....</b>  | 102 |
| <i>R. Bernhaupt, M. Pirker, D. Schwaiger, A. Desnos</i>   |     |
| <b>ADAPTIVE TELEVISION USER INTERFACE USING MACHINE LEARNING CONCEPTS .....</b>   | 110 |
| <i>D. Bhat and N. Kannan</i>  |     |
| <b>REAL-TIME SOCIAL MEDIA INDEXING AND SEARCH .....</b>   | 118 |
| <i>I. Kompatiaris, S. Diplaris, D. Corney, N. Heise, M. Klusch, E. Jaho, J. Geurts, Y. Liu, G. Petkos, S. Papadopoulos, N. Sarris, A. Goker, J. Spangenberg</i> |     |
| <b>COMPARATIVE EVALUATION OF RECOMMENDER SYSTEMS FOR DIGITAL MEDIA .....</b>  | 126 |
| <i>D. Tikk, R. Turrin, M. Larson, D. Zibriczky, D. Malagoli, A. Said, A. Lommatzsch, V. Gál, S. Székely</i>   |     |
| <b>CONSTRUCTING A SECOND-SCREEN PLATFORM LED BY BROADCASTING STATIONS .....</b>   | 136 |
| <i>K. Yano, S. Hamaguchi, T. Yokoyama, M. Nishii, H. Yokoo</i>  |     |
| <b>SOURCE-TIMED SDN VIDEO SWITCHING OF PACKETIZED VIDEO .....</b>   | 144 |
| <i>T. G. Edwards</i>  |     |
| <b>BROADCAST TIMING, GENLOCK AND TIME CODE IN THE MULTI FORMAT NETWORK AGE .....</b>  | 154 |
| <i>N. Seth-Smith</i>  |     |
| <b>IP LIVE PRODUCTION .....</b>   | 163 |
| <i>P. N. Gardiner, J. J. Stone, J.-R. Chen, T. Kojima</i>   |     |
| <b>ASSISTED SUBTITLING: A NEW OPPORTUNITY FOR ACCESS SERVICES .....</b>   | 171 |
| <i>C. Aliprandi, I. Gallucci, N. Piccinini, M. Raffaelli, A. Del Pozo, A. Álvarez, R. Cassaca, J. Neto, C. Mendes, M. Viveiros</i>                              |     |
| <b>HOW TO ACHIEVE PHOTOSENSITIVE EPILEPSY COMPLIANCE - WITHOUT MURDERING YOUR CREATIVE CONTENT .....</b>  | 180 |
| <i>M. Hodgetts</i>  |     |
| <b>MEDIA ACCESSIBILITY IN HBBTV: INTERACTION FOR ALL .....</b>  | 191 |
| <i>P. Ororo, J. Birch, A. Lamourne</i>  |     |

|  |     |
|--|-----|
| <b>THE LANDSCAPE FOR GLOBAL BROADCAST STANDARDS</b>  | 199 |
| <i>G. Faria</i>  |     |
| <b>IMPROVING BANDWIDTH EFFICIENCY THANKS TO DVB-S2X</b>  | 207 |
| <i>J. Rodriguez, A. Mourelle, I. Sanz</i>  |     |
| <b>SFN-SCOPE: AN INNOVATIVE FIELD ANALYSIS SYSTEM FOR SFN DVB-T SIGNALS</b>  | 215 |
| <i>B. Sacco and V. Mignone</i>   |     |
| <b>TRANSMISSION SYSTEM FOR 8K SUPER HI-VISION SATELLITE BROADCASTING</b>   | 223 |
| <i>Y. Suzuki, K. Tsuchida, Y. Matsusaki, A. Hashimoto, S. Tanaka, T. Ikeda, N. Okumura</i>                                       |     |
| <b>IMPLEMENTATION OF ENHANCED HEVC/H.265 ENCODERS: SUPPORTING NEW REQUIREMENTS AND FUNCTIONALITIES</b>                           | 231 |
| <i>A. Dueñas and J. Ridge</i>  |     |
| <b>ULTRA-HD CONTENT ACQUISITION AND EXCHANGE USING HEVC RANGE EXTENSIONS</b>   | 243 |
| <i>M. S. Goldman, L. Litwic, O. Baumann</i>  |     |
| <b>HEVC SUBJECTIVE VIDEO QUALITY TEST RESULTS</b>  | 256 |
| <i>T. K. Tan, M. Mrak, R. Weerakkody, N. Ramzan, V. Baroncini, G. J. Sullivan, J.-R. Ohm, K. D. McCann</i>                       |     |
| <b>ULTRA HD DEPLOYMENT PERSPECTIVES</b>  | 264 |
| <i>T. Fautier</i>  |     |
| <b>TEMPORAL VERSUS SPATIAL RESOLUTION-COMPARATIVE TESTS FOR BROADCAST SPORTS</b>   | 271 |
| <i>P. Routhier and E. Pérez-Pellitero</i>  |     |
| <b>DEVELOPMENT OF 8K-UHDTV SYSTEM WITH WIDE-COLOUR GAMUT AND 120-HZ FRAME FREQUENCY</b>  | 286 |
| <i>T. Soeno, T. Yasue, K. Kitamura, K. Masaoka, Y. Kusakabe, H. Shimamoto, T. Yamashita, Y. Nishida, M. Sugawara</i>             |     |
| <b>LIVE EVENT EXPERIENCES - INTERACTIVE UHDTV ON MOBILE DEVICES</b>  | 298 |
| <i>O. A. Niamut, G. A. Thomas, E. Thomas, R. Van Brandenburg, L. D'Acunto, R. Gregory-Clarke</i>                                 |     |
| <b>HIGH FRAME-RATE TELEVISION: SAMPLING THEORY, THE HUMAN VISUAL SYSTEM AND WHY THE NYQUIST-SHANNON THEOREM DOESN'T APPLY</b>    | 306 |
| <i>K. C. Noland</i>  |     |
| <b>DEPLOYING WIDE COLOUR GAMUT AND HIGH DYNAMIC RANGE IN HD AND UHD</b>  | 314 |
| <i>C. Poynton, J. Stessen, R. Nijland</i>  |     |
| <b>INNOVATIONS IN 3-D COLOUR LUTS FOR DISPLAY CALIBRATION</b>  | 324 |
| <i>C. Poynton and J. Barsotti</i>  |     |
| <b>ON-SET PREVISUALIZATION FOR VFX FILM PRODUCTION</b>   | 332 |
| <i>G. Briand, F. Bidgolirad, J. F. Szlapka, J. M. Lavalou, M. Lanouiller, M. Christie, J. Lvoff, P. Bertolino, E. Guillou</i>    |     |
| <b>OBJECT-BASED BROADCASTING - CURATION, RESPONSIVENESS AND USER EXPERIENCE</b>  | 340 |
| <i>M. Armstrong, M. Brooks, A. Churnside, M. E. F. Melchior, M. Shotton</i>  |     |
| <b>COMPUTATIONAL IMAGING FOR STOP-MOTION ANIMATED VIDEO PRODUCTIONS</b>  | 348 |
| <i>F. Zilly, M. Ziegler, J. Keinert, M. Schöberl, S. Foessel</i>   |     |
| <b>EFFICIENT WORKFLOWS FOR AUTOMATED RICH METADATA PRODUCTION</b>  | 356 |
| <i>R. Kirk, B. Schofield, D. Dulchinos</i>   |     |
| <b>ENABLING SEMANTIC SEARCH &amp; RETRIEVAL WITH BUSINESS-DRIVEN AUTOMATED INFORMATION EXTRACTION</b>                            | 364 |
| <i>M. Matton, W. Bailer, M. Elser, J. P. Évain, F. Glaeser, A. Messina, R. Mies, F. Negro, C. Ruiz</i>                           |     |
| <b>FROM THE CLOUD TO TV PRODUCTION: A REAL WORLD CASE STUDY OF AN ARCHITECTURE AND PERFORMANCE MODEL</b>                         | 374 |
| <i>M. Montenovo</i>  |     |
| <b>CONTENTS MANAGEMENT SYSTEM SPECIALIZED HANDLING METADATA FOR BROADCASTING AND OTHER SERVICES BASED ON FILE-BASED WORKFLOW</b> | 382 |
| <i>M. Urakawa and K. Sugimori</i>  |     |
| <b>VIDEO OVER LTE: EXPLORING EFFICIENCY IN DISTRIBUTION</b>  | 390 |
| <i>J. Huschke and H. Voigt</i>   |     |
| <b>Author Index</b>  |     |