

# **2015 IEEE International Conference on Multimedia Big Data**

**(BigMM 2015)**

**Beijing, China  
20-22 April 2015**



**IEEE Catalog Number: CFP1553Y-POD  
ISBN: 978-1-4799-8689-7**

# 2015 IEEE International Conference on Multimedia Big Data

## BigMM 2015

### Table of Contents

Message from General Chairs.....	xii
Message from Program Chairs .....	xiii
Conference Organization.....	xiv
Technical Program Committee.....	xvii
Reviewers .....	xx

---

### BigMM Summit

Fuelling Big Data Intelligence into Future Multimedia System: Reflection and Outlook .....	1
<i>Yonggang Wen and Wenwu Zhu</i>	
On Analyzing the 'Variety' of Big Social Multimedia .....	5
<i>Jitao Sang and Changsheng Xu</i>	
RAISE: A Whole Process Modeling Method for Unstructured Data Management .....	9
<i>Ling Chen, Jian Shao, Zhou Yu, Jianling Sun, Fei Wu, and Yueting Zhuang</i>	
Categorizing Big Video Data on the Web: Challenges and Opportunities .....	13
<i>Yu-Gang Jiang</i>	
Prospects and Challenges of Deep Understanding Social Users and Urban Services - A Position Paper .....	16
<i>Guoshuai Zhao and Xueming Qian</i>	
Multimedia Analysis with Deep Learning .....	20
<i>Qingbo Wu, Hua Zhang, Si Liu, and Xiaochun Cao</i>	
Structure-Based Learning in Sampling, Representation and Analysis for Multimedia Big Data .....	24
<i>Hongkai Xiong</i>	
Cross-Modality Sentiment Analysis for Social Multimedia .....	28
<i>Rongrong Ji, Donglin Cao, and Dazhen Lin</i>	

## Social BigMM

Semi-supervised Multimodal Clustering Algorithm Integrating Label Signals for Social Event Detection .....	32
<i>Zhenguo Yang, Qing Li, Zheng Lu, Yun Ma, Zhiguo Gong, and Haiwei Pan</i>	
Constructing Social Networks Based on Near-Duplicate Detection in YouTube Videos .....	40
<i>Tianyuan Yu, Liang Bai, Jinlin Guo, and Zheng Yang</i>	
Food Category Representatives: Extracting Categories from Meal Names in Food Recordings and Recipe Data .....	48
<i>Sosuke Amano, Kiyoharu Aizawa, and Makoto Ogawa</i>	
Predicting Retweet Scale Using Log-Normal Distribution .....	56
<i>Hongyi Ding and Ji Wu</i>	
Temporal Multiple Correspondence Analysis for Big Data Mining in Soccer Videos .....	64
<i>Yimin Yang, Shu-Ching Chen, and Mei-Ling Shyu</i>	

## BigMM Retrieval

Utilizing Indirect Associations in Multimedia Semantic Retrieval .....	72
<i>Hsin-Yu Ha, Shu-Ching Chen, and Mei-Ling Shyu</i>	
Multi2Rank: Multimedia Multiview Ranking .....	80
<i>David Etter and Carlotta Domeniconi</i>	
Model of Human Visual Cortex Inspired Computational Models for Visual Recognition .....	88
<i>Jinjun Wang, Qiqi Hou, Nan Liu, and Shizhou Zhang</i>	
Mobile Crowd Sensing for Internet of Things: A Credible Crowdsourcing Model in Mobile-Sense Service .....	92
<i>An Jian, Gui Xiaolin, Yang Jianwei, Sun Yu, and He Xin</i>	
Lightweight Binary Voxel Shape Features for 3D Data Matching and Retrieval .....	100
<i>Takahiro Matsuda, Takahiko Furuya, and Ryutarou Ohbuchi</i>	
An Efficient Cascaded Filtering Retrieval Method for Big Audio Data .....	108
<i>Shanshan Yao, Yunsheng Wang, and Baoning Niu</i>	
Integrating Visual and Textual Features for Web Image Clustering .....	116
<i>D.S. Xia, Z.Q. Xiang, and Y.X. Zou</i>	
A Robust Acoustic Feature Extraction Approach Based on Stacked Denoising Autoencoder .....	124
<i>J.H. Liu, W.Q. Zheng, and Y.X. Zou</i>	

## **BigMM Analysis**

Detecting Rare Actions and Events from Surveillance Big Data with Bag of Dynamic Trajectories .....	128
<i>Yaowei Wang, Yonghong Tian, Limin Su, Xiaoyu Fang, Ziwei Xia, and Tiejun Huang</i>	
Real-Time Tracking with Selective DoP-RIEF Features for Augmented Reality .....	136
<i>Yi Zhang, Ping Lu, Jie Chen, and Lingyu Duan</i>	
Multimedia Big Data Computing for In-Depth Event Analysis .....	144
<i>Ruben Tous, Jordi Torres, and Eduard Ayguadé</i>	

## **BigMM Processing**

Cloud Based Image Contrast Enhancement .....	148
<i>Shiqi Wang, Ke Gu, Siwei Ma, Weisi Lin, Xiang Zhang, and Wen Gao</i>	
Fast Estimation of Relative Poses for 6-DOF Image Localization .....	156
<i>Yafei Song, Xiaowu Chen, Xiaogang Wang, Yu Zhang, and Jia Li</i>	
Towards Accurate and Efficient Image Quality Assessment with Interest Points .....	164
<i>Xiang Zhang, Shiqi Wang, Siwei Ma, and Wen Gao</i>	
Fast CABAC Rate Estimation for HEVC Mode Decision .....	171
<i>Wei Li and Peng Ren</i>	
Incremental Learning for Compressed Pornographic Image Recognition .....	176
<i>Chao Wang, Jing Zhang, Li Zhuo, and Xin Liu</i>	
Approximate Computing in Chrominance Cache for Image/Video Processing .....	180
<i>Fei Qiao, Ni Zhou, Yuanchang Chen, and Huazhong Yang</i>	

## **BigMM System**

Harvest the Information from Multimedia Big Data in Global Camera Networks .....	184
<i>Wei-Tsung Su, Yung-Hsiang Lu, and Ahmed S. Kaseb</i>	
An Automated Image Analysis Framework for Thermal Barrier Coating Porosity Measurement .....	192
<i>Wei-Bang Chen, Yongjin Lu, Song Gao, Chengcui Zhang, James Li, Olayinka S. Ogunbunmi, Ligaj Pradhan, Pallant Ramsundar, and Ben Zimmerman</i>	
Big Data Collection and Analysis Framework Research for Public Digital Culture Sharing Service .....	196
<i>Guigang Zhang, Jian Wang, Weixin Huang, Haixia Su, Zhi Lv, Qi Yao, and Shufeng Ye</i>	
Ameba: A High-Performance and Energy-Efficient Online Video Retrieval System .....	200
<i>Jin Yang, Jianmin Pang, Jintao Yu, and Wei Cao</i>	

Novel Metaknowledge-Based Processing Technique for Multimediatea Big Data Clustering Challenges .....	204
<i>Nima Bari, Roman Vichr, Kamran Kowsari, and Simon Y. Berkovich</i>	
A Methodology and a Tool to Prepare Agro-Meteorological Maps as a Source of Big Data .....	208
<i>Muhammad Ahtisham Aslam and Ahsan Abdullah</i>	
An Adaptive Solution for Large-Scale, Cross-Video and Real-Time Visual Analytics .....	212
<i>Xiao Hu, Zhihong Yu, Huan Zhou, Hongbo Lv, Zhipeng Jiang, and Xiang Zhou</i>	
Fractional-Order PID Control Method for Space Teleoperation .....	216
<i>Zhong Shi, Xuexiang Huang, Qian Tan, and Tianjian Hu</i>	

## **BigMM Applications**

Geometric Consistent Tree Partitioning Min-Hash for Large-Scale Partial Duplicate Image Discovery .....	220
<i>Qian Zhang and Guoping Qiu</i>	
Service Objective Evaluation via Exploring Social Users' Rating Behaviors .....	228
<i>Guoshuai Zhao and Xueming Qian</i>	
TOP-SIFT: A New Method for SIFT Descriptor Selection .....	236
<i>Yujie Liu, Xiaoming Chen, Qilu Zhao, Zongmin Li, and Jianping Fan</i>	
Unsupervised Geo-Demographic Classification of City-Area Using Multimodal Multimedia Data .....	240
<i>Monika Sharma, Kiran Francis, and Hiranmay Ghosh</i>	
Geo-Localization Based Scene Recognition .....	244
<i>Ting Wu, Fen Huang, Jin Liang Yao, and Bing Yang</i>	
Analysis and Visualization of Traffic Conditions of Road Network by Route Bus Probe Data .....	248
<i>Dechen Liu, Yusuke Kitamura, Xin Zeng, Shunsuke Araki, and Kenfichi Kakizaki</i>	
Scalable 3D Facial Shape Motion Retrieval from Image Sequences Using a Map-Reduce Framework .....	252
<i>Xi Zhao, Zhimin Gao, Jianhua Zou, Weidong Shi, and Wei Huang</i>	
A Bird's Eye View on Wawacity: Characteristics on Contents and Files .....	256
<i>Nan Zhao, Soufiane Khoudmi, Loic Baud, and Patrick Bellot</i>	
A Better Approach for Conceptual Readability of WSDL .....	260
<i>Kashif Sohail Abid, Asif Sohail Abid, and M. Mohsen Ansari</i>	

## BigMM Challenge

Cross Camera Object Tracking in High Resolution Video Based on TLD Framework .....	264
<i>Hanzhang Wang, Qingguo Xiao, Qingwei Ye, and Xiaodong Wang</i>	
Multiple Objects Tracking and Identification Based on Sparse Representation in Surveillance Video .....	268
<i>Bin Sun, Zhi Liu, Yulin Sun, Fangqi Su, Lijun Cao, and Haixia Zhang</i>	
Activity Prediction Based on Spatiotemporal Model in a Multiple Cameras Network .....	272
<i>Minxian Li, Zhihao Jiang, Jinhui Tang, and Chunxia Zhao</i>	
Object Tracking over a Multiple-Camera Network .....	276
<i>Zhenzhong Chen, Weihang Liao, Bin Xu, Hongyi Liu, Qisheng Li, He Li, Chao Xiao, Hang Zhang, Yiming Li, Wentao Bao, and Daiqin Yang</i>	

## Posters

CNN Based Vehicle Counting with Virtual Coil in Traffic Surveillance Video .....	280
<i>Jilong Zheng, Yaowei Wang, and Wei Zeng</i>	
A Prototype Decision Support System for Privacy-Service Trading .....	282
<i>Ake Osothongs, Vorapong Suppakitpaisan, and Noboru Sonehara</i>	
Query Object Detection in Big Video Data on Hadoop Framework .....	284
<i>U.S.N. Raju, N. Kishan Varma, Harikrishna Pariveda, and Kotte Abhilash Reddy</i>	
Visualization of a Scale Free Network in a Smartphone-Based Multimedia Big Data Environment .....	286
<i>Akhlaq Ahmad, Md. Abdur Rahman, Bilal Sadiq, Shady Mohammed, Saleh Basalamah, and Mohamed Ridza Wahiddin</i>	
A Multimedia Big Data E-Therapy Framework .....	288
<i>Ahmad M. Qamar, Syed Osama Hussain, Bilal Sadiq, Ahmed R. Khan, Md. Abdur Rahman, and Saleh Basalamah</i>	
Evaluating 3D Hand Motion with a Softkinetic Camera .....	290
<i>Amin Safaei and Q.M. Jonathan Wu</i>	
Petroleum Geoscience Big Data and GPU Parallel Computing .....	292
<i>Fei Han and Sam Z. Sun</i>	

## **BigMM-HIS: Workshop on Multimedia Big Data and Hyperspectral Imaging**

A Novel Video Authentication Scheme with Secure CS-Watermark in Cloud .....	294
<i>Huimin Zhao and Fangyuan Lei</i>	
Multi-view Pedestrian Detection Using Statistical Colour Matching .....	300
<i>Ming Xu and Jeremy S. Smith</i>	
Fusion of Dominant Colour and Spatial Layout Features for Effective Image Retrieval of Coloured Logos and Trademarks .....	306
<i>Yijun Yan, Jinchang Ren, Yinsheng Li, James Windmill, and Winifred Ijomah</i>	
System for Hyperspectral Data Analysis, Visualization and Fresco Deterioration Detection .....	312
<i>Dongying Lu, Zheng Wang, Dong Zhang, and Meijun Sun</i>	
Negative Bootstrapping for Weakly Supervised Target Detection in Remote Sensing Images .....	318
<i>Peicheng Zhou, Dingwen Zhang, Gong Cheng, and Junwei Han</i>	
Gabor-Filtering-Based Completed Local Binary Patterns for Land-Use Scene Classification .....	324
<i>Chen Chen, Libing Zhou, Jianzhong Guo, Wei Li, Hongjun Su, and Fangda Guo</i>	

## **GG-BigMM: Workshop on Geometry and Graphics for BigMM**

Rolling Shutter Effect Compensation with Global Waves Analysis .....	330
<i>Xiaofu Huang, Bin Sheng, Ruimin Shen, and Ping Li</i>	
Key Frame Selection Based on KL-Divergence .....	337
<i>Liangkai Li, Qing Xu, Xiaoxiao Luo, and Shihua Sun</i>	
A Quick and Unambiguous Approach for Sketch-Based Game Manipulation .....	342
<i>Kai Kuai and Guangzheng Fei</i>	
Research on the Application of Face Symbol in Thematic Map Making .....	348
<i>Yujie Yao, Xiaoran Zhu, Juan Zhang, and Lifeng Jiang</i>	
Fast Discrete Intersection Detection for Cloth Penetration Resolution .....	352
<i>Juntao Ye, Timo R. Nyberg, and Gang Xiong</i>	
A Novel Visualization Method of Power Transmission Lines .....	358
<i>Shuwei Pei, Xiaofu Huang, Bin Sheng, Lizhuang Ma, Dan Wu, and Ping Li</i>	
Visual Simulation of Plant Interacting with Burning Flame Based on the Law of Physics .....	362
<i>Weilong Ding, Lei Zheng, and Lifeng Xu</i>	
Approach for 3D Reconstructing Bonsai Plant .....	366
<i>Xuemin Liu, Meng Yang, Cheng Wang, and Gang Yang</i>	

## **ET-SAD 2015: First International Workshop on Emerging Techniques on Big Surveillance Data Analysis**

Extracting Recurrent Motion Flows from Crowded Scene Videos: A Coherent Motion-Based Approach .....	371
<i>Yang Mi, Lihang Liu, Weiyao Lin, and Weiyue Wang</i>	
Detection and Association Based Multi-target Tracking in Surveillance Video .....	377
<i>Dahu Shi, Shun Zhang, Jinjun Wang, and Yihong Gong</i>	
High Performance Object Detection on Big Video Data Using GPUs .....	383
<i>Praveen Kumar</i>	
Human Action Recognition Based on DMMs, HOGs and Contourlet Transform .....	389
<i>Mohammad Farhad Bulbul, Yunsheng Jiang, and Jinwen Ma</i>	

## **MM-BDC 2015: First International Workshop on Multimedia Big Data Compression**

Three-Dimensional Point-Cloud Plus Patches: Towards Model-Based Image Coding in the Cloud .....	395
<i>Dong Liu, Tong Shao, Houqiang Li, and Feng Wu</i>	
Uncrowded Window Inspired Ultra High Definition Television Display .....	401
<i>Zhongpai Gao and Guangtao Zhai</i>	
Remote Sensing Image Compression: A Review .....	406
<i>Shichao Zhou, Chenwei Deng, Baojun Zhao, Yatong Xia, Qisheng Li, and Zhenzhong Chen</i>	
Performance Evaluation for AVS2 Scene Video Coding Techniques .....	411
<i>Siwei Dong, Yonghong Tian, and Tiejun Huang</i>	
Accelerating IEEE 1857 Deblocking Filter on GPU Using CUDA .....	415
<i>Xiaou Sun and Ronggang Wang</i>	
Inter-frame Correlation Based Quantization Parameter Offset Optimization for Screen Content Video Coding .....	420
<i>Juanting Fan, Shanshe Wang, Shiqi Wang, Ruiqin Xiong, and Siwei Ma</i>	
<b>Author Index</b> .....	<b>424</b>