2014 IEEE Southwest Symposium on Image Analysis and Interpretation

(SSIAI 2014)

San Diego, California, USA
6-8 April 2014
# TABLE OF CONTENTS

## SESSION MA1

1: FEATURE WISE REPRESENTATION FOR BOTH STILL AND MOTION 3D MEDICAL IMAGES  
Xiaohong Gao, Middlesex University, United Kingdom

2: ORDERED SPATIAL SUBSETS FOR FASTER RECONSTRUCTION IN SPECT  
Wenyuan Qi, Yongyi Yang, Illinois Institute of Technology, United States

3: A CONVOLUTIONAL NEURAL NETWORK APPROACH FOR CLASSIFYING LEUKOCORIA  
Ryan Henning, Pablo Rivas-Perea, Bryan Shaw, Greg Hamerly, Baylor University, United States

4: FINDING THE SMALLEST CIRCLE CONTAINING THE IRIS IN THE DENOISED WAVELET DOMAIN  
Pablo Rivas-Perea, Ryan Henning, Bryan Shaw, Greg Hamerly, Baylor University, United States

5: NOISE REDUCTION IN PET SINOGRAMS USING NON-LOCAL TOTAL VARIATION REGULARIZATION.  
Jose Mejia, Boris Mederos, Universidad Autonoma de Ciudad Juarez, Mexico; Sergio Cabrera, University of Texas at El Paso, United States; Humberto Ochoa-Dominguez, Osslan Vergara-Villegas, Universidad Autonoma de Ciudad Juarez, Mexico

## SESSION MA2

1: FAST AND EFFICIENT LOSSLESS IMAGE COMPRESSION BASED ON CUDA PARALLEL WAVELET TREE ENCODING  
Jingqi Ao, Sunanda Mitra, Brian Nutter, Texas Tech University, United States

2: IMPLEMENTATION OF ERROR RESILIENCE TECHNIQUE FOR MULTIVIEW VIDEO CODING  
Abdulkareem B Ibrahim, Abdul H Sadka, Brunel University London, United Kingdom

3: A UNIFIED AND PIPELINED HARDWARE ARCHITECTURE FOR IMPLEMENTING INTRA PREDICTION IN HEVC  
Yuebing Jiang, Daniel Llamocca, Marios Pattichis, Gangadharan Esakki, University of new mexico, United States

4: SEGMENTATION OF DYNAMIC OBJECTS IN VIDEO SEQUENCES FUSING THE STRENGTHS OF A BACKGROUND SUBTRACTION MODEL, OPTICAL FLOW AND MATTING ALGORITHMS.  
Graciela Ramírez-Alonso, Mario I. Chacón-Murguía, Chihuahua Institute of Technology, Mexico

5: SIMPLE, EFFECTIVE RATE CONTROL FOR VIDEO DISTRIBUTION IN HETEROGENEOUS INTELLIGENT TRANSPORTATION SYSTEM NETWORKS  
Ekasit Vorakitolan, Joseph Havlicek, Ronald Barnes, University of Oklahoma, United States; Alan Stevenson, Oklahoma Department of Transportation, United States
POSTER SESSION

2: COLOR IMAGE RECOVERY SYSTEM FROM PRINTED GRAY IMAGE ........................................41
Jiqiang Lin, Takahiko Horiuchi, Keita Hirai, Shoji Tominaga, Chiba University, Japan

4: 4-DOF POSE ESTIMATION OF A PIPE CRAWLING ROBOT USING A COLLIMATED LASER, A CONIC MIRROR, AND A FISH-EYE CAMERA
Abbasali Dehghan Tezerjani, Mehran Mehrandezh, Raman Paranjape, University of Regina, Canada

5: USING AFFINE FEATURES FOR AN EFFICIENT BINARY FEATURE DESCRIPTOR .................49
Alok Desai, Dah-Jye Lee, Craig Wilson, Brigham Young University, United States

6: HEAD OPERATED ELECTRIC WHEELCHAIR ..............................................................................53
Farid Abedan Kondori, UMEÅ UNIVERSITY, Sweden; Shahrouz Yousefi, KTH ROYAL INSTITUTE OF TECHNOLOGY, Sweden; Li Liu, UMEÅ UNIVERSITY, Sweden; Haibo Li, KTH ROYAL INSTITUTE OF TECHNOLOGY, Sweden

7: TEMPORAL ANALYSIS AND PERCEPTUAL WEIGHTING FOR OBJECTIVE VIDEO QUALITY MEASUREMENT
Jose Vinicius de Miranda Cardoso, Federal University of Campina Grande, Brazil; Italo de Pontes Oliveira, Carlos Danilo Miranda Regis, Federal Institute of Education, Science and Technology of Paraíba, Brazil; Marcelo Sampaio Alencar, Federal University of Campina Grande, Brazil

8: A PCA-BASED THRESHOLDING STRATEGY FOR GROUP STUDIES OF BRAIN CONNECTIVITY – WITH APPLICATIONS TO RESTING STATE FMRI
Erik A Hanson, University of Bergen, Norway; Erling Westlye, Volda Hospital, Norway; Arvid Lundervold, University of Bergen, Norway

9: PREDICTION OF VISUAL DISCOMFORT IN WATCHING 3D VIDEO USING MULTIPLE FEATURES
Sang-Hyun Cho, Hang-Bong Kang, The Catholic University of Korea, Republic of Korea

11: LOW-COST CAMERA ARRAY FOR MITIGATING LIGHTING RANGE EFFECTS ..................69
Brian Fehrman, Jeff McGough, South Dakota School of Mines and Technology, United States

12: IMAGE-BASED GEOGRAPHICAL LOCATION ESTIMATION USING WEB CAMERAS ...........73
Jeehyun Choe, Purdue University, United States; Thitiporn Poramoun, Thumrongrat Amornraksa, King Mongkut’s University of Technology Thonburi, Thailand; Yung-Hsiang Lu, Edward J. Delp, Purdue University, United States

SESSION MP1

1: REMOVING JPEG BLOCKING ARTIFACTS USING MACHINE LEARNING..................................77
Jonathan Quijas, Olac Fuentes, University of Texas at El Paso, United States

2: SPATIO-TEMPORAL MULTIMODAL MEAN..............................................................................81
Shoaib Azmat, Linda Wills, Scott Wills, Georgia Institute of Technology, United States

3: SKINCURE: A REAL TIME IMAGE ANALYSIS SYSTEM TO AID IN THE MALIGNANT MELANOMA PREVENTION AND EARLY DETECTION
Omar Abuzaghleh, Buket D. Barkana, Miad Faezipour, University of Bridgeport, United States
4: NO-REFERENCE TASK PERFORMANCE PREDICTION ON DISTORTED LWIR .........................89
IMAGES
Todd Goodall, Alan Bovik, University of Texas at Austin, United States

5: TRACKING SUNFLOWER CIRCUMNUTATION USING AFFINE PARAMETRIC .....................93
ACTIVE CONTOURS
Suvadip Mukherjee, Rituparna Sarkar, Joshua Vandenbrink, Scott Acton, Benjamin Blackman, University of Virginia, United States

SESSION TA1

1: TARGETED L1L2: NATURALNESS-CONSTRAINED IMAGE RECOVERY FROM .....................97
RANDOM PROJECTIONS
Greg Freeman, Constantine Caramanis, Alan Bovik, The University of Texas at Austin, United States

2: DEPTH MAPPING USING A LOW-COST CAMERA ARRAY ..........................................................101
Brian Fehrman, Jeff McGough, South Dakota School of Mines and Technology, United States

3: HANDLING OCCLUSION WITH AN INEXPENSIVE ARRAY OF CAMERAS ..............................105
Brian Fehrman, Jeff McGough, South Dakota School of Mines and Technology, United States

4: A COMPARISON OF TRACKING ALGORITHM PERFORMANCE FOR OBJECTS IN ..............109
WIDE AREA IMAGERY
Rohit C. Philip, Sundaresh Ram, Xin Gao, Jeffrey J. Rodriguez, University of Arizona, United States

5: MOTION ESTIMATION REVISITED: AN ESTIMATION-THEORETIC APPROACH...............113
Rudolf Mester, Linkoping University, Sweden

SESSION TA2

1: LINEAR ADAPTIVE INFRARED IMAGE FUSION.............................................................................117
Chuong Nguyen, Joseph Havlicek, University of Oklahoma, United States

2: SINGLE IMAGE SUPER-RESOLUTION USING DICTIONARY-BASED LOCAL ..........................121
REGRESSION
Sundaresh Ram, Jeffrey J. Rodriguez, University of Arizona, United States

3: CLUSTER-BASED MULTI-TASK SPARSE REPRESENTATION FOR EFFICIENT FACE ............125
RECOGNITION
Soheil Shafiee, Farhad Kamangar, Laleh SH. Ghandehari, University of Texas at Arlington, United States

4: FREQUENCY GUIDED PHASE UNWRAPPING FOR IMPROVED AM-FM ..............................129
RECONSTRUCTION
Patrick Campbell, Joseph Havlicek, University of Oklahoma, United States

5: PARTICLE SWARM OPTIMIZATION TO DETERMINE CONJOINTLY WELL ....................133
LOCALIZED MLTS
Peter Tay, Yanjun Yan, Western Carolina University, United States
SESSION TP1

1: RECURSIVE ACTIVE CONTOURS FOR HIERARCHICAL SEGMENTATION OF WETLANDS IN HIGH-RESOLUTION SATELLITE IMAGERY OF ARCTIC LANDSCAPES
Alexei Skurikhin, Los Alamos National Laboratory, United States; Anna Liljedahl, University of Alaska, United States; Cathy Wilson, Joel Rowland, Los Alamos National Laboratory, United States

2: IMPROVED IMAGE SEGMENTATION MODEL COMBINING REGION AND EDGE INFORMATION FOR INHOMOGENEOUS IMAGES
Yunyun Yang, Yi Zhao, Shenzhen Graduate School, Harbin Institute of Technology, China; Boying Wu, Harbin Institute of Technology, China

3: SUPERPIXELS USING MORPHOLOGY FOR ROCK IMAGE SEGMENTATION
Sree Ramya Surya Prabha Malladi, Sundaresh Ram, Jeffrey J. Rodriguez, University of Arizona, United States

4: A NOTE ON CONVEX IMAGE SEGMENTATION MODEL BASED ON LOCAL AND GLOBAL INTENSITY FITTING ENERGY
Yunyun Yang, Yi Zhao, Shenzhen Graduate School, Harbin Institute of Technology, China; Boying Wu, Harbin Institute of Technology, China; Hongpeng Wang, Shenzhen Graduate School, Harbin Institute of Technology, China

5: IMAGE SEGMENTATION THROUGH COMBINED METHODS: WATERSHED TRANSFORM, UNSUPERVISED DISTANCE LEARNING AND NORMALIZED CUT
Tiago Pinto, Marco Antonio Garcia de Carvalho, Unicamp, Brazil; Daniel Pedronette, UNESP, Brazil; Paulo Martins, Unicamp, Brazil

SESSION TP2

1: CHANNELING MR. POTATO HEAD - FACE SUPER-RESOLUTION USING SEMANTIC COMPONENTS
Anustup Choudhury, Andrew Segall, Sharp Laboratories of America, United States

2: SOCIAL BEHAVIOR ANALYSIS OF DROSOPHILA LARVAE VIA MOTION ACTIVITY RECOGNITION
Micah Consylman, Suvadip Mukherjee, Charles L. Brown Department of Electrical and Computer Engineering, United States; Dipi Prasad Mukherjee, Electronics and Communication Sciences Unit, India Statistical Institute, India; Barry Condron, Department of Biology, University of Virginia, United States; Scott T. Acton, Charles L. Brown Department of Electrical and Computer Engineering, United States

3: REFERENCELESS PERCEPTUAL IMAGE DEFOGGING
Lark Kwon Choi, The University of Texas at Austin, United States; Jaehee You, Hongik University, Republic of Korea; Alan Bovik, The University of Texas at Austin, United States

4: THE FAST DISCRETE PERIODIC RADON TRANSFORM FOR PRIME Sized IMAGES: ALGORITHM, ARCHITECTURE, AND VLSI/FPGA IMPLEMENTATION
Cesar Carranza, Daniel Llamocca, Marios Pattichis, University of New Mexico, United States