

2019 International Conference on Image and Vision Computing New Zealand (IVCNZ 2019)

**Dunedin, New Zealand
2 – 4 December 2019**



**IEEE Catalog Number: CFP1967E-POD
ISBN: 978-1-7281-4188-6**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1967E-POD
ISBN (Print-On-Demand):	978-1-7281-4188-6
ISBN (Online):	978-1-7281-4187-9
ISSN:	2151-2191

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
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

SEMI FEW-SHOT ATTRIBUTE TRANSLATION	1
<i>Ricard Durall ; Franz-Josef Pfreundt ; Janis Keuper</i>	
CONIFEROUS TREES NEEDLES-BASED TAXONOMY CLASSIFICATION	9
<i>Michal Haindl ; Pavel Žid</i>	
RECOGNIZING TEXT WITH A CNN	15
<i>Kulsoom Mansoor ; Clark F. Olson</i>	
BREAST DENSITY CLASSIFICATION USING MULTIFRACTAL SPECTRUM WITH HISTOGRAM ANALYSIS	21
<i>Haipeng Li ; Ramakrishnan Mukundan ; Shelley Boyd</i>	
XYOLO: A MODEL FOR REAL-TIME OBJECT DETECTION IN HUMANOID SOCCER ON LOW-END HARDWARE	27
<i>Daniel Barry ; Munir Shah ; Merel Keijsers ; Humayun Khan ; Banon Hopman</i>	
REAL-TIME POWER LINE DETECTION NETWORK USING VISIBLE LIGHT AND INFRARED IMAGES	33
<i>Hyeyeon Choi ; Gyogwon Koo ; Bum Jun Kim ; Sang Woo Kim</i>	
DEEP LEARNING FOR POLLEN SAC DETECTION AND MEASUREMENT ON HONEYBEE MONITORING VIDEO	39
<i>Cheng Yang ; John Collins</i>	
THREE-DIMENSIONAL (3D) RECONSTRUCTION OF DRIED VERTEBRAE FROM BI-PLANAR RADIOGRAPHS	45
<i>Hamza Bennani ; Brendan McCane</i>	
FUSION OF THERMAL AND VISIBLE COLOUR IMAGES FOR ROBUST DETECTION OF PEOPLE IN FORESTS	51
<i>Jaco Fourie ; Kapila Pahalawatta ; Jeffrey Hsiao ; Christopher Bateman ; Peter Carey</i>	
SEMI-SUPERVISED ATTENTIVE MUTUAL-INFO GENERATIVE ADVERSARIAL NETWORK FOR BRAIN TUMOR SEGMENTATION	57
<i>Nan Xi</i>	
ARE THESE BIRDS SIMILAR: LEARNING BRANCHED NETWORKS FOR FINE-GRAINED REPRESENTATIONS	64
<i>Shah Nawaz ; Alessandro Calefati ; Moreno Caraffini ; Nicola Landro ; Ignazio Gallo</i>	
A DEEP LEARNING APPROACH TO HANDWRITTEN TEXT RECOGNITION IN THE PRESENCE OF STRUCK-OUT TEXT	69
<i>Hiqmat Nisa ; James A. Thom ; Vic Ciesielski ; Ruwan Tennakoon</i>	
3D RIGID REGISTRATION OF PATIENT BODY SURFACE POINT CLOUDS BY INTEGER LINEAR PROGRAMMING	75
<i>Jingheng Chen ; Fugen Zhou ; Bo Liu ; Xiangzhi Bai ; Yuxuan Zhang ; Tao Zhao ; Nan Li ; Yutao Zhou</i>	
GETNET: GET TARGET AREA FOR IMAGE PAIRING	81
<i>Henry H. Yu ; Jiang Liu ; Hao Sun ; Ziwen Wang ; Haotian Zhang</i>	
AUTOMATED SEGMENTATION OF BREAST ARTERIAL CALCIFICATIONS FROM DIGITAL MAMMOGRAPHY	87
<i>Kaier Wang ; Nabeel Khan ; Ralph Highnam</i>	
CENTROIDING OF TRUNCATED SHACK-HARTMANN LASER GUIDE STAR IMAGES WITH KNOWN REFERENCE IMAGES	93
<i>Richard M. Clare ; Stephen J. Weddell ; Miska Le Louarn</i>	
ACCURATE 3D MEASUREMENT OF HIGHLY SPECULAR SURFACE USING LASER AND STEREO RECONSTRUCTION	99
<i>Arpita Dawda ; Minh Nguyen ; Reinhard Klette</i>	
IMAGE CORRECTION WITH CURVATURE AND GEOMETRIC WAVEFRONT SENSORS IN SIMULATION AND ON-SKY	105
<i>Sierra Hickman ; Steve Weddell ; Richard Clare</i>	
RGB IMAGING BASED ESTIMATION OF LEAF CHLOROPHYLL CONTENT	111
<i>Yuan Chang ; Steven Le Moan ; Donald Bailey</i>	
A LIGHT IN DARK PLACES – 3D RECONSTRUCTION FROM STEREO VIEWS WITH A MOVING LIGHT SOURCE	117
<i>Hamza Bennani ; Steven Mills</i>	

ITERATIVE PROJECTION ALGORITHMS FOR SOLVING CONSTRAINT SATISFACTION PROBLEMS: EFFECT OF CONSTRAINT CONVEXITY	123
<i>Rick P. Millane ; Joshua T. Taylor ; Romain D. Arnal ; David H. Wojtas ; Richard M. Clare</i>	
HUMAN DENSITY ESTIMATION BY EXPLOITING DEEP SPATIAL CONTEXTUAL INFORMATION	128
<i>Chau-Phuc-Thinh Phan ; Anh Hoang ; Doan-Phuc Phan ; Huu-Hung Dao ; Van-Nam Huynh</i>	
SUB-PIXEL REGISTRATION TECHNIQUE FOR X-RAY PHASE CONTRAST IMAGING	133
<i>Hamish Bradley ; Donald Bailey ; Steven Le Moan ; Peter Gaenz ; Sven Simon</i>	
A NOVEL METHOD TO ACHIEVE ORDERED DITHERING IN IMAGES.....	138
<i>Sunpreet Sharma ; Ju Jia Zou ; Gu Fang</i>	
CRACK SEGMENTATION ON UAS-BASED IMAGERY USING TRANSFER LEARNING	143
<i>Christian Benz ; Paul Debus ; Huy Khanh Ha ; Volker Rodehorst</i>	
A COLOR MOMENTS-BASED SYSTEM FOR RECOGNITION OF EMOTIONS INDUCED BY COLOR IMAGES	149
<i>Seyed Abdolreza Mohseni ; Hong Ren Wu</i>	
ROTATION AND SCALE INVARIANT BISPECTRAL FEATURE BASED RECOGNITION OF CONTACTLESS PALMPRINTS	155
<i>Akmal-Jahan Mohamed-Abdul-Cader ; Jasmine Banks ; Kien Nguyen Thanh ; Vinod Chandran</i>	
AB INITIO PHASING USING DIFFRACTION DATA FROM DIFFERENT CRYSTAL FORMS	162
<i>Romain D. Arnal ; Markus Metz ; Andrew J. Morgan ; Henry N. Chapman ; Rick P. Millane</i>	
AN ACCURATE BLACK LUNG DETECTION USING TRANSFER LEARNING BASED ON DEEP NEURAL NETWORKS	168
<i>Liton Devnath ; Suhuai Luo ; Peter Summons ; Dadong Wang</i>	
SEMANTIC SEGMENTATION OF SHEEP ORGANS BY CONVOLUTIONAL NEURAL NETWORKS.....	174
<i>Syed Ibrahim Hassan ; Martin Stommel ; Andrew Lowe ; Qi Zhang ; Weiliang Xu</i>	
USE OF MOIRÉ PATTERNS IN CAMERA POSITION ESTIMATION	179
<i>Samuel Banks ; Richard Green ; Jun Junghyun</i>	
PLANT LEAF RECOGNITION USING GEOMETRIC FEATURES AND PEARSON CORRELATIONS.....	186
<i>Md. Ajij ; Diptendu Sinha Roy ; Sanjoy Pratihar</i>	
BODY PART LABELLING WITH MINKOWSKI NETWORKS.....	192
<i>Joseph Cahill-Lane ; Steven Mills ; Stuart Duncan</i>	
GENERALIZATION APPROACH FOR CNN-BASED OBJECT DETECTION IN UNCONSTRAINED OUTDOOR ENVIRONMENTS	198
<i>Hedi Hedayati ; Benjamin J. McGuinness ; Michael J. Cree ; John A. Perrone</i>	
ADAPTATION OF BIDIRECTIONAL KALMAN FILTER TO MULTI-FREQUENCY TIME-OF-FLIGHT RANGE IMAGING.....	204
<i>A. N. Alqassab ; L. Streeter ; M. J. Cree ; C. A. Lickfold ; V. Farrow ; S. H. Lim</i>	
LOCALISATION FOR AUGMENTED REALITY AT SPORT EVENTS	210
<i>Patrick Skinner ; Stefanie Zollmann</i>	
MINUTIAE TRIANGLE GRAPHS: A NEW FINGERPRINT REPRESENTATION WITH INVARIANCE PROPERTIES	216
<i>Akmal-Jahan Mohamed-Abdul-Cader ; Watcharapong Chaidee ; Jasmine Banks ; Vinod Chandran</i>	
FREQUENCY BASED RADIAL VELOCITY ESTIMATION IN TIME-OF-FLIGHT RANGE IMAGING	222
<i>Carl A. Lickfold ; Lee Streeter ; Michael J. Cree ; Jonathan B. Scott</i>	
OBJECT DETECTION FOR VERIFICATION BASED ANNOTATION	228
<i>Oliver Batchelor ; Richard Green</i>	
ON IMPROVING BOUNDING BOX REGRESSION TOWARDS ACCURATE OBJECT DETECTION AND TRACKING	234
<i>Hsiang-Jen Chien ; Zahra Moayed ; Yuhong Zhu ; Yuanyuan Zhang ; Reinhard Klette</i>	
MULTI-VIEW GAIT RECOGNITION USING SPARSE REPRESENTATION	240
<i>Neel Pandey ; Waleed Abdulla ; Zoran Salcic</i>	
EVALUATING SPATIAL CONFIGURATION CONSTRAINED CNNs FOR LOCALIZING FACIAL AND BODY POSE LANDMARKS.....	246
<i>Christian Payer ; Darko Štern ; Martin Urschler</i>	
THE EVOLUTION OF ADJACENCY MATRICES FOR SPARSITY OF CONNECTION IN DENSENETS	252
<i>Damien O'Neill ; Bing Xue ; Mengjie Zhang</i>	
AN IMPROVED SELECTIVE FACIAL EXTRACTION MODEL FOR AGE ESTIMATION	258
<i>Chengwen Song ; Lingmin He ; Wei Qi Yan ; Parma Nand</i>	

DISPARITY REFINEMENT WITH GUIDED FILTERING OF SOFT 3D COST FUNCTION IN MULTI-VIEW STEREO SYSTEM.....	264
<i>Min-Jae Lee ; Gi-Mun Um ; Joungil Yun ; Won-Sik Cheong ; Soon-Yong Park</i>	
EXTENDING INPUT CHANNEL USING GLOBAL FEATURE IMAGE FOR CONVOLUTIONAL NEURAL NETWORKS.....	269
<i>A. Abduraimjonov ; H. Choi ; J. Ko</i>	
FINGERTIPS DETECTION IN EGOCENTRIC VIDEO FRAMES USING DEEP NEURAL NETWORKS.....	273
<i>Purnendu Mishra ; Kishor Sarawadekar</i>	
SALIENT OBJECT DETECTION BASED ON CNN FUSION OF TWO TYPES OF SALIENCY MODELS.....	279
<i>Muhammad Umair Hassan ; Dongmei Niu ; Xiuyang Zhao ; Md Shakil Ahamed Shohag ; Yingjun Ma ; Mingxuan Zhang</i>	
PIPP: PERSON IDENTIFICATION FROM PALM-SURFACE POLYGONS.....	285
<i>Md. Ajij ; Diptendu Sinha Roy ; Sanjoy Pratihar</i>	
INTERPRETABLE INFERENCE GRAPHS FOR FACE RECOGNITION.....	291
<i>Siddhant Garg ; Goutham Ramakrishnan ; Varun Thumbe</i>	
STITCHING PARTIAL 3D MODELS WITH AN APPLICATION TO MODELLING STONE FLAKES.....	297
<i>Finn Petrie ; Steven Mills ; Hamza Bennani ; Richard Walter ; Karen Greig</i>	
IDENTIFYING SIMPLE SHAPES TO CLASSIFY THE BIG PICTURE.....	302
<i>Megan Liang ; Gabrielle Palado ; Will N. Browne</i>	
GENETIC PROGRAMMING FOR MULTIPLE FEATURE CONSTRUCTION IN SKIN CANCER IMAGE CLASSIFICATION.....	308
<i>Qurrat Ul Ain ; Bing Xue ; Harith Al-Sahaf ; Mengjie Zhang</i>	
CLASS EMBODIMENT AUTOENCODER (CEAE) FOR CLASSIFYING THE BOTANICAL ORIGINS OF HONEY.....	314
<i>Tessa Phillips ; Waleed Abdulla</i>	
TOWARDS A MAORI TELEPRESENCE SYSTEM.....	319
<i>Jung-Woo Noel Park ; Steven Mills ; Hemi Whaanga ; Paora Mato ; Robert W. Lindeman ; Holger Regenbrecht</i>	
LEARNING AND ANALYSIS OF AUSRAP ATTRIBUTES FROM DIGITAL VIDEO RECORDING FOR ROAD SAFETY.....	325
<i>Thihagoda Gamage Pubudu Sanjeevani ; Brijesh Verma</i>	
TRACK CYCLIST DETECTION AND IDENTIFICATION USING MASK R-CNN AND K-MEANS CLUSTERING.....	331
<i>Marco Tyler-Rodrigue ; Richard Green</i>	
PEDESTRIAN PROXIMITY DETECTION USING RGB-D DATA.....	337
<i>Adam Tupper ; Richard Green</i>	
JIGSAW PUZZLE SOLVER TO LOCATE PIECE POSITION.....	343
<i>Sophie McGill-Smith ; Richard Green</i>	
COMPARISON OF THREE-DIMENSIONAL SCANNING DEVICES.....	349
<i>Niklas Deckers ; Ralf Reulke</i>	
FAST AND SECURED VISUAL CONTENT HIDING IN LOSSY COMPRESSED IMAGES AND VIDEO STREAMS.....	355
<i>Hoa Nguyen ; Minh Nguyen</i>	
AN IMAGE MAPPING APPROACH FOR QUICK DISSIMILARITY DETECTION OF BINARY IMAGES.....	361
<i>Adnan A. Y. Mustafa</i>	
Author Index	