International Conference on Image Processing, Computer Vision, & Pattern Recognition (IPCV'19)

Las Vegas, Nevada, USA
29 July – 1 August 2019

Editors:

Hamid R. Arabnia
Leonidas Deligiannidis
Fernando G. Tinetti
Ashu M.G. Solo

ISBN: 978-1-7138-5323-7

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© (2019) by CSREA Press
All rights reserved.

Printed by Curran Associates, Inc. (2022)

For permission requests, please contact CSREA Press
at the address below.

CSREA Press
ATTN: Hamid R. Arabnia
1060 Long Creek Drive
Watkinsville, GA 30677
USA

Phone: (706) 542-3480

hra@cs.uga.edu

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
Web: www.proceedings.com

Contents

SESSION: IMAGING SCIENCE, MACHINE LEARNING, DEEP NETWORKS AND VARIATIONS + SENSOR TECHNOLOGIES

Unsupervised Object Discovery and Inference with Deep Latent Similarity Model **3**
Shuanglu Dai, Hong Man

A Short Review on Image Caption Generation with Deep Learning **10**
Soheyla Amirian, Khaled Rasheed, Thiab R. Taha, Hamid R. Arabnia

Improved Stereo Matching based on Convolutional Neural Network **19**
Yingnan Geng, Mi Lu, Baixiu Ding, Wenrui Zhang, Yindong Hua

Vehicle Crashes: Early Detection Through Image Recognition **23**
Laura Mails, Abigail Payne, Myles McLeroy, Travis Atkison

SRGAN: Training Dataset Matters **29**
Nao Takano, Gita Alaghband

On the Agreement of Commodity 3D Cameras **36**
Johan Hagelback, Alisa Lincke, Welf Lowe, Eduard Rall

On Stationary Periodic Kernels **43**
Hongjun Su, Hong Zhang

A Convolution Neural Network Based Smart Parking System **47**
Andres Estebanez, Praveen Meduri

MetaNet: A Boosting-Inspired Deep Learning Image Classification Ensemble Technique **51**
Junyi He, Ian Pedroza, Qingzhong Liu

Modality Detection and Classification of Biomedical Images with Deep Transfer Learning and Feature Extraction **55**
Jose Dixon, Mahmudur Rahman

Traffic Sign Detection using Region Based Convolutional Neural Networks **59**
Sai Praneeth Allaboina, Vaishnavi Ganapuram, Hima Cherukuri, Madhavi Latha Makkena

SESSION: IMAGING SCIENCE, NOVEL ALGORITHMS AND APPLICATIONS

Integrated Application for Computer-Aided Image Stitching, Navigation, and Analysis for Large-Scale Whole-Slide Osteosarcoma Images **65**
Bogdan Armaselu, Harish Arunachalam, Rashika Mishra, Saloni Aggarwal, Ovidiu Daescu

New Initialization Strategy for Nonnegative Matrix Factorization **72**
Yueyang Wang, Bahram Shafai

Unsupervised Weighed Graph-Based Terrain Filtering Using Terrestrial Laser Scanning Data **78**
Yassine Belkhouche

Singular Level Curves of Harmonic Functions, Conformal Mappings and Emerging Applications to Shape Recognition of Planar-domains **85**
Saar Hersonsky, Eric Perkerson

Vision Based Coastline Detection for Autonomous Unmanned Aerial Systems **89**
Wei Chen, Dulal Kar, Simon Merheb

No-Reference Video Quality Assessment Using Spatial, Temporal, Transform, and Spatiotemporal Features **94**
Yi-Lun Chiang , Jin-Jang Leou

A System for the Detection and Identification of Objects and Their Distances to Aid Blind People **98**
Abdelfatah A. Tamimi, Alaa A. Abu Hammad, Ayman M. Abdalla, Omaima N. Al-Allaf

3D Surface Reconstruction of Trees using a Region-based Active Contour Model **105**
Shijun Tang, Sihai Tang

Visible and NIR Image Blending for Night Vision **110**
Tae-Young Jung, Dong-Min Son, Sung-Hak Lee

Sports Skill Analysis for Motion Data Focused on Frequency **114**
Toshiyuki Maeda, Chikako Mitsuyasu, Akiyoshi Wakatani

SESSION: IMAGING SCIENCE, SECURITY AND SURVEILLANCE APPLICATIONS + WATERMARKING

Robust Digital Watermarking and Recovery via Deep Residual Learning **121**
Alwyn Aswin, Yanzhen Qu

Designing a Robust Image Steganography Algorithm using the Discrete Cosine Transform **128**
Jemilade Longe, Gahangir Hossain, Ayush Goyal

Image Steganography: Review study **134**
Haval Mohammed, Muzhir Shaban

SESSION: POSTER PAPERS AND EXTENDED ABSTRACTS

Arm Control of a Tele-existence Robot by Correcting the Influence of the Vision System **143**
Shunya Suzuki, Yuki Matsui, Yuki Mori, Hideo Furuhashi

Chroma Uniformity Assessment of LED Display Based on HVS **145**
Baixiu Ding, Yingnan Geng, Mi Lu

Real-Time Embedded System for Human Detection and Tracking **147**
Chun-Chieh Lee, Chih-Yu Wang, Chiao-Wen Kao, Kuo-Chin Fan

SESSION: LATE BREAKING PAPERS: IMAGING SCIENCE AND APPLICATIONS

Non-Contact Surface Displacement Measurement for Concrete Samples using Image Correlation Technique **151**
Hector Cruz, Siavash F. Aval, Keyur Dhawan, Mohammad Pourhomayoun, Tonatiuh Rodriguez-Nikl, Mehran Mazari