

Table of Contents

Second Workshop on Consumer Depth Cameras for Computer Vision (CDC4CV)

High Accuracy TOF and Stereo Sensor Fusion at Interactive Rates	1
<i>Rahul Nair, Frank Lenzen, Stephan Meister, Henrik Schäfer, Christoph Garbe, and Daniel Kondermann</i>	
A Modular Framework for 2D/3D and Multi-modal Segmentation with Joint Super-Resolution	12
<i>Benjamin Langmann, Klaus Hartmann, and Otmar Loffeld</i>	
Real-Time Plane Segmentation and Obstacle Detection of 3D Point Clouds for Indoor Scenes	22
<i>Zhe Wang, Hong Liu, Yueliang Qian, and Tao Xu</i>	
Combining Textural and Geometrical Descriptors for Scene Recognition	32
<i>Neslihan Bayramo\u011flu, Janne Heikkil\u00e4, and Matti Pietik\u00e4inen</i>	
Human-Centric Indoor Environment Modeling from Depth Videos	42
<i>Jiwen Lu and Gang Wang</i>	
Human Daily Action Analysis with Multi-view and Color-Depth Data	52
<i>Zhongwei Cheng, Lei Qin, Yituo Ye, Qingming Huang, and Qi Tian</i>	
Viewpoint Invariant Matching via Developable Surfaces	62
<i>Bernhard Zeisl, Kevin K\"oser, and Marc Pollefeys</i>	
A Unified Energy Minimization Framework for Model Fitting in Depth	72
<i>Carl Yuheng Ren and Ian Reid</i>	
Object Recognition Robust to Imperfect Depth Data	83
<i>David F. Fouhey, Alvaro Collet, Martial Hebert, and Siddhartha Srinivasa</i>	
3D Object Detection with Multiple Kinects	93
<i>Wandi Susanto, Marcus Rohrbach, and Bernt Schiele</i>	

Unsolved Problems in Optical Flow and Stereo Estimation

Combining Monocular Geometric Cues with Traditional Stereo Cues for Consumer Camera Stereo	103
<i>Adarsh Kowdle, Andrew Gallagher, and Tsuhan Chen</i>	
Quality Assessment of Non-dense Image Correspondences	114
<i>Anita Sellent and Jochen Wingbermühle</i>	
A Complete Confidence Framework for Optical Flow	124
<i>Patricia Márquez-Valle, Debora Gil, and Aura Hernández-Sabaté</i>	
An Improved Stereo Matching Algorithm with Ground Plane and Temporal Smoothness Constraints	134
<i>Cevahir Çığla and A. Aydin Alatan</i>	
On the Evaluation of Scene Flow Estimation	148
<i>Philippos Mordohai</i>	
Analysis of KITTI Data for Stereo Analysis with Stereo Confidence Measures	158
<i>Ralf Haeusler and Reinhard Klette</i>	
Lessons and Insights from Creating a Synthetic Optical Flow Benchmark	168
<i>Jonas Wulff, Daniel J. Butler, Garrett B. Stanley, and Michael J. Black</i>	

What's in a Face?

Modeling and Detection of Wrinkles in Aging Human Faces Using Marked Point Processes	178
<i>Nazre Batool and Rama Chellappa</i>	
How Does Aging Affect Facial Components?	189
<i>Charles Otto, Hu Han, and Anil Jain</i>	
Spatio-Temporal Multifeature for Facial Analysis	199
<i>Zahid Riaz and Michael Beetz</i>	
The Role of Facial Regions in Evaluating Social Dimensions	210
<i>David Masip Rodo, Alexander Todorov, and Jordi Vitrià Marca</i>	
Illumination Normalization Using Self-lighting Ratios for 3D2D Face Recognition	220
<i>Xi Zhao, Shishir K. Shah, and Ioannis A. Kakadiaris</i>	
Robust Learning from Normals for 3D Face Recognition	230
<i>Ioannis Marras, Stefanos Zafeiriou, and Georgios Tzimiropoulos</i>	

Coupled Marginal Fisher Analysis for Low-Resolution Face Recognition	240
<i>Stephen Sieni, Vishnu Naresh Boddeti, and B.V.K. Vijaya Kumar</i>	
Exploring Bag of Words Architectures in the Facial Expression Domain	250
<i>Karan Sikka, Tingfan Wu, Josh Susskind, and Marian Bartlett</i>	
Kernel Conditional Ordinal Random Fields for Temporal Segmentation of Facial Action Units	260
<i>Ognjen Rudovic, Vladimir Pavlovic, and Maja Pantic</i>	
Exploring the Facial Expression Perception-Production Link Using Real-Time Automated Facial Expression Recognition	270
<i>David M. Deriso, Josh Susskind, Jim Tanaka, Piotr Winkielman, John Herrington, Robert Schultz, and Marian Bartlett</i>	
Understanding Critical Factors in Appearance-Based Gender Categorization	280
<i>Enrico Grosso, Andrea Lagorio, Luca Pulina, and Massimo Tistarelli</i>	
Facial Landmarking: Comparing Automatic Landmarking Methods with Applications in Soft Biometrics	290
<i>Amrutha Sethuram, Karl Ricanek, Jason Saragih, and Chris Boehnen</i>	
Gender Recognition Using Cognitive Modeling	300
<i>Jens Fagertun, Tobias Andersen, and Rasmus Reinhold Paulsen</i>	
Periocular Recognition Using Retinotopic Sampling and Gabor Decomposition	309
<i>Fernando Alonso-Fernandez and Josef Bigun</i>	
Exploiting Perception for Face Analysis: Image Abstraction for Head Pose Estimation	319
<i>Anant Vidur Puri and Brejesh Lall</i>	
Complex Bingham Distribution for Facial Feature Detection	330
<i>Eslam Mostafa and Aly Farag</i>	
4th Color and Photometry in Computer Vision Workshop 2012	
Estimating Surface Normals from Spherical Stokes Reflectance Fields ...	340
<i>Giuseppe Claudio Guarnera, Pieter Peers, Paul Debevec, and Abhijet Ghosh</i>	
Base Materials for Photometric Stereo	350
<i>David Tingdahl, Christoph Godau, and Luc Van Gool</i>	

Robust Luminance and Chromaticity for Matte Regression in Polynomial Texture Mapping	360
<i>Mingjing Zhang and Mark S. Drew</i>	
Illuminant Estimation from Projections on the Planckian Locus	370
<i>Baptiste Mazin, Julie Delon, and Yann Gousseau</i>	
Lighting Estimation in Indoor Environments from Low-Quality Images	380
<i>Natalia Neverova, Damien Muselet, and Alain Tréneau</i>	
Color Constancy Using Single Colors	390
<i>Simone Bianco</i>	
An Effective Method for Illumination-Invariant Representation of Color Images	401
<i>Takahiko Horiuchi, Abdelhameed Ibrahim, Hideki Kadoi, and Shojo Tominaga</i>	
Specularity, the Zeta-image, and Information-Theoretic Illuminant Estimation	411
<i>Mark S. Drew, Hamid Reza Vaezi Joze, and Graham D. Finlayson</i>	
Robust Estimation of Pigment Distributions from Multiband Skin Images and Its Application to Realistic Skin Image Synthesis	421
<i>Motonori Doi, Masahiro Konishi, Akira Kimachi, Shogo Nishi, and Shojo Tominaga</i>	
A Fisheye Camera System for Polarisation Detection on UAVs	431
<i>Wolfgang Stürzl and Nicole Carey</i>	
Time-Lapse Image Fusion	441
<i>Francisco J. Estrada</i>	
HDR Imaging under Non-uniform Blurring	451
<i>C.S. Vijay, Paramanand Chandramouli, and Rajagopalan Ambasamudram</i>	
Semantic Image Segmentation Using Visible and Near-Infrared Channels	461
<i>Neda Salamat, Diane Larlus, Gabriela Csurka, and Sabine Süsstrunk</i>	
Utilization of False Color Images in Shadow Detection	472
<i>Yagiz Aksoy and A. Aydin Alatan</i>	
High Information Rate and Efficient Color Barcode Decoding	482
<i>Homayoun Bagherinia and Roberto Manduchi</i>	
Uzawa Block Relaxation Methods for Color Image Restoration	492
<i>Cédric Loosli, Stéphanie Jehan-Besson, and Jonas Koko</i>	

Third Workshop on Computer Vision in Vehicle Technology: From Earth to Mars

Monocular Rear-View Obstacle Detection Using Residual Flow	504
<i>Jose Molineros, Shinko Y. Cheng, Yuri Owechko, Dan Levi, and Wende Zhang</i>	
Subtraction-Based Forward Obstacle Detection Using Illumination Insensitive Feature for Driving-Support	515
<i>Haruya Kyutoku, Daisuke Deguchi, Tomokazu Takahashi, Yoshito Mekada, Ichiro Ide, and Hiroshi Murase</i>	
Adaptive Visual Obstacle Detection for Mobile Robots Using Monocular Camera and Ultrasonic Sensor	526
<i>Ibrahim K. İyidir, F. Boray Tek, and Doğan Kircalı</i>	
Data-Driven Vehicle Identification by Image Matching	536
<i>Jose A. Rodriguez-Serrano, Harsimrat Sandhawalia, Raja Bala, Florent Perronnin, and Craig Saunders</i>	
A Vision-Based Navigation Facility for Planetary Entry Descent Landing	546
<i>Piergiorgio Lanza, Nicoletta Noceti, Corrado Maddaleno, Antonio Toma, Luca Zini, and Francesca Odone</i>	
CYKLS: Detect Pedestrian's Dart Focusing on an Appearance Change	556
<i>Masahiro Ogawa, Hideo Fukamachi, Ryuji Funayama, and Toshiki Kindo</i>	
Pose-Invariant Face Recognition in Videos for Human-Machine Interaction	566
<i>Bogdan Raducanu and Fadi Dornaika</i>	
Hierarchical Properties of Multi-resolution Optical Flow Computation	576
<i>Yusuke Kameda, Atsushi Imiya, and Tomoya Sakai</i>	
Semantic Road Segmentation via Multi-scale Ensembles of Learned Features	586
<i>Jose M. Alvarez, Yann LeCun, Theo Gevers, and Antonio M. Lopez</i>	
Monocular Visual Odometry and Dense 3D Reconstruction for On-Road Vehicles	596
<i>Menglong Zhu, Srikumar Ramalingam, Yuichi Taguchi, and Tyler Garaas</i>	
Author Index	607