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Videometrics, Range Imaging, and Applications XII; and Automated Visual Inspection

**Fabio Remondino
Mark R. Shortis
Jürgen Beyerer
Fernando Puente León**
Editors

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Contents

- ix Conference Committee
- xi Introduction

Part A Videometrics, Range Imaging, and Applications XII

INDUSTRIAL APPLICATIONS AND AUTOMATION

- 8791 03 **A webcam photogrammetric method for robot calibration** [8791-2]
B. Sargeant, A. Hosseinineh A., T. Erfani, S. Robson, J. Boehm, Univ. College London (United Kingdom)
- 8791 04 **Investigation of a consumer-grade digital stereo camera** [8791-3]
F. Menna, Fondazione Bruno Kessler (Italy); E. Nocerino, Fondazione Bruno Kessler (Italy) and Univ. degli Studi di Napoli Parthenope (Italy); F. Remondino, Fondazione Bruno Kessler (Italy); M. Shortis, RMIT Univ. (Australia)
- 8791 06 **Monitoring structure movement with laser tracking technology** [8791-5]
L. Barazzetti, A. Giussani, F. Roncoroni, M. Previtali, Politecnico di Milano (Italy)

AUTOMATION AND IMAGE REGISTRATION

- 8791 07 **Image selection in photogrammetric multi-view stereo methods for metric and complete 3D reconstruction** [8791-7]
A. Hosseinineh Ahmadabadian, S. Robson, J. Boehm, Univ. College London (United Kingdom); M. Shortis, RMIT Univ. (Australia)
- 8791 08 **Mosaicking thermal images of buildings** [8791-8]
L. Barazzetti, S. Erba, M. Previtali, E. Rosina, Politecnico di Milano (Italy); M. Scaioni, Tongji Univ. (China)
- 8791 09 **Evaluation of outlier detection based on support vector machine regression for close-range photogrammetry** [8791-9]
Y. Y. Lu, C. Stamatopoulos, C. S. Fraser, The Univ. of Melbourne (Australia)

POINT CLOUD PROCESSING AND ANALYSIS

- 8791 0B **Automatic object detection in point clouds based on knowledge guided algorithms** [8791-11]
H. Truong, i3mainz (Germany) and Le2i, CNRS, Univ. of Burgundy (France);
A. Karmacharya, W. Mordwinzew, F. Boochs, C. Chudyk, i3mainz (Germany); A. Habed, Y. Voisin, Le2i, CNRS, Univ. of Burgundy (France)

- 8791 OC **3D scanner point cloud denoising by near points surface fitting** [8791-12]
V. Smítka, M. Štroner, Czech Technical Univ. in Prague (Czech Republic)
- 8791 OD **View integration technique using multi-resolution point clouds in 3D modeling** [8791-13]
E. Hołowko, R. Sitnik, Warsaw Univ. of Technology (Poland)
- 8791 OF **Alignment of range image data based on MEMS IMU and coarse 3D models derived from evacuation plans** [8791-15]
A. M. Khosravani, M. Peter, D. Fritsch, Univ. Stuttgart (Germany)

IMAGE-BASED RECONSTRUCTION, TRACKING AND MONITORING

- 8791 OG **A review of techniques for the identification and measurement of fish in underwater stereo-video image sequences** [8791-16]
M. R. Shortis, M. Ravanbaksch, RMIT Univ. (Australia); F. Shaifat, E. S. Harvey, A. Mian, The Univ. of Western Australia (Australia); J. W. Seager, SeaGIS Pty. Ltd. (Australia); P. F. Culverhouse, Plymouth Univ. (United Kingdom); D. E. Cline, D. R. Edgington, Monterey Bay Aquarium Research Institute (United States)
- 8791 OH **A photogrammetric approach to survey floating and semi-submerged objects** [8791-17]
F. Menna, Fondazione Bruno Kessler (Italy); E. Nocerino, Fondazione Bruno Kessler (Italy) and Univ. degli Studi di Napoli Parthenope (Italy); S. Troisi, Univ. degli Studi di Napoli Parthenope (Italy); F. Remondino, Fondazione Bruno Kessler (Italy)
- 8791 OI **Experiences in determination of non-rigid body motion in industrial environment using low-cost photogrammetry** [8791-18]
E. Rupnik, J. Jansa, Technische Univ. Wien (Austria)
- 8791 OJ **High accuracy low-cost videogrammetric system: an application to 6DOF estimation of ship models** [8791-19]
E. Nocerino, Fondazione Bruno Kessler (Italy) and Univ. degli Studi di Napoli Parthenope (Italy); F. Menna, Fondazione Bruno Kessler (Italy); S. Troisi, Univ. degli Studi di Napoli Parthenope (Italy)
- 8791 OK **Generation of synthetic image sequences for the verification of matching and tracking algorithms for deformation analysis** [8791-20]
F. Bethmann, C. Jepping, T. Luhmann, Jade Univ. of Applied Sciences (Germany)
- 8791 OL **Stochastic process modeling for multiple human tracking using stereo video camera** [8791-21]
T. Fuse, W. Nakanishi, The Univ. of Tokyo (Japan)

ACTIVE SENSORS CHARACTERISATION AND APPLICATIONS

- 8791 OM **Metrological characterization of 3D imaging devices (Invited Paper)** [8791-22]
G. Guidi, Politecnico di Milano (Italy)
- 8791 ON **Estimating the roughness of rock fractures and geomorphic surfaces by multiresolution analysis of terrestrial LiDAR data** [8791-23]
G. Mills, G. Fotopoulos, The Univ. of Texas at Dallas (United States)

- 8791 OP **Lighting estimation in fringe images during motion compensation for 3D measurements** [8791-25]
A. Breitbarth, P. Kühmstedt, G. Notni, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); J. Denzler, Friedrich-Schiller-Univ. Jena (Germany)
- 8791 OQ **A robotized six degree of freedom stage for optical microscopy** [8791-26]
M. Z. Avramov, I. Ivanov, V. Pavlov, K. Zaharieva, Sofia Univ. "St. Kliment Ohridski" (Bulgaria)

TIME OF FLIGHT CALIBRATION AND MODELLING I

- 8791 OR **A background light resistant TOF range finder with integrated PIN photodiode in 0.35µm CMOS** [8791-28]
M. Davidovic, Avago Technologies Fiber Austria GmbH (Austria); J. Seiter, M. Hofbauer, W. Gaberl, H. Zimmermann, Technische Univ. Wien (Austria)

3D SHAPE MEASUREMENT AND RECONSTRUCTION

- 8791 OT **Optical sensor feedback assistive technology to enable patients to play an active role in the management of their body dynamics during radiotherapy treatment** [8791-30]
J. M. Parkhurst, The Christie NHS Foundation Trust (United Kingdom); G. J. Price, The Christie NHS Foundation Trust (United Kingdom) and The Univ. of Manchester (United Kingdom); P. J. Sharrock, J. Stratford, The Christie NHS Foundation Trust (United Kingdom); C. J. Moore, The Christie NHS Foundation Trust (United Kingdom) and The Univ. of Manchester (United Kingdom)
- 8791 OU **Technique for real-time frontal face image acquisition using stereo system** [8791-31]
V. A. Knyaz, Y. V. Vizilter, Y. I. Kudryashov, GosNIIAS, State Research Institute of Aviation Systems (Russian Federation)
- 8791 OV **Improved EEG source localization employing 3D sensing by "Flying Triangulation"** [8791-32]
S. Ettl, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); S. Rampp, S. Fouladi-Movahed, Universitätsklinikum Erlangen (Germany); S. S. Dalal, Univ. Konstanz (Germany); F. Willomitzer, O. Arold, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); H. Stefan, Universitätsklinikum Erlangen (Germany); G. Häusler, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

TIME OF FLIGHT CALIBRATION AND MODELLING II

- 8791 OX **A study of systematic errors in the PMD CamBoard nano** [8791-34]
J. C. K. Chow, D. D. Lichti, Univ. of Calgary (Canada)
- 8791 OY **Correction of a phase dependent error in a time-of-flight range sensor** [8791-35]
J. Seiter, M. Hofbauer, Technische Univ. Wien (Austria); M. Davidovic, Technische Univ. Wien (Austria) and Avago Technologies Fiber Austria GmbH (Austria); H. Zimmermann, Technische Univ. Wien (Austria)

- 8791 0Z **Correction of the temperature dependent error in a correlation based time-of-flight system by measuring the distortion of the correlation signal** [8791-36]
M. Hofbauer, J. Seiter, Technische Univ. Wien (Austria); M. Davidovic, Technische Univ. Wien (Austria) and Avago Technologies Fiber Austria GmbH (Austria); H. Zimmermann, Technische Univ. Wien (Austria)

POSTER SESSION FOR VIDEOMETRICS, RANGE IMAGING, AND APPLICATIONS XII

- 8791 10 **Development of virtual pipe fitting system** [8791-38]
H. Yokoyama, K. Takeuchi, Hitachi Plant Technologies, Ltd. (Japan)
- 8791 12 **2D and 3D documentation of St. Nicolas Baroque church for the general reconstruction using laser scanning and photogrammetry technologies combination** [8791-40]
T. Křemen, B. Koska, Czech Technical Univ. in Prague (Czech Republic)
- 8791 13 **Calibration of profile laser scanner with conical shape modification for autonomous mapping system** [8791-41]
B. Koska, Czech Technical Univ. in Prague (Czech Republic)
- 8791 14 **Relative orientation of videos from range imaging cameras** [8791-42]
S. Ghuffar, C. Ressler, N. Pfeifer, Technische Univ. Wien (Austria)
- 8791 16 **An improved calibration method for structured light projection measurement system** [8791-44]
B. Li, B. Li, B. Liu, T. Jiang, Xi'an Jiaotong Univ. (China)

Part B Automated Visual Inspection

IMAGE ACQUISITION

- 8791 17 **Miniature photometric stereo system for textile surface structure reconstruction** [8791-50]
D. Gorpas, Ctr. for Research and Technology Hellas (Greece) and Univ. of California, Davis (United States); C. Kampouris, S. Malassiotis, Ctr. for Research and Technology Hellas (Greece)
- 8791 18 **Multi-view line-scan inspection system using planar mirrors** [8791-51]
B. Holländer, AIT Austrian Institute of Technology GmbH (Austria); S. Štolc, AIT Austrian Institute of Technology GmbH (Austria) and Institute of Measurement Science (Slovakia); R. Huber-Mörk, AIT Austrian Institute of Technology GmbH (Austria)
- 8791 1B **Reconstruction of specular surfaces via probabilistic voxel carving** [8791-54]
A. Pak, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany) and Karlsruher Institut für Technologie (Germany)

IMAGE FUSION AND PROCESSING

- 8791 1D **Inspecting rapidly moving surfaces for small defects using CNN cameras** [8791-56]
A. Blug, D. Carl, H. Höfler, Fraunhofer-Institut für Physikalische Messtechnik (Germany)

- 8791 1E **Combined spatial and spectral unmixing of image signals for material recognition in automated inspection systems** [8791-57]
M. Michelsburg, F. Puente León, Karlsruher Institut für Technologie (Germany)
- 8791 1F **Model based image restoration for underwater images** [8791-58]
T. Stephan, Karlsruher Institut für Technologie (Germany); P. Frühberger, S. Werling, M. Heizmann, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany)
- 8791 1G **Automated real-time search and analysis algorithms for a non-contact 3D profiling system** [8791-59]
M. Haynes, C.-H. J. Wu, B. T. Beck, R. J. Peterman, Kansas State Univ. (United States)

AUTOMATED INSPECTION

- 8791 1H **A semi-automatic measurement system based on digital image analysis for the application to the single fiber fragmentation test** [8791-60]
S. Blobel, K. Thielsch, V. Ulbricht, Technische Univ. Dresden (Germany)
- 8791 1I **Automatic area based registration method and its application to the surface inspection of steel industry products** [8791-61]
R. García Llenderros, I. Álvarez García, J. M. Enguita González, S. Rodríguez Jiménez, Univ. de Oviedo (Spain)
- 8791 1J **Investigation of fluorescence spectra disturbances influencing the classification performance of fluorescently labeled plastic flakes** [8791-62]
P. Fomin, S. Brunner, C. Kargel, Univ. der Bundeswehr München (Germany)
- 8791 1K **Development of automated endoscopes for dimensional micro-measurements** [8791-63]
F. Hrebabetzky, Photonita Ltda. (Brazil)

POSTER SESSION FOR AUTOMATED VISUAL INSPECTION

- 8791 1L **Fast car/human classification methods in the computer vision tasks** [8791-64]
B. V. Vishnyakov, I. K. Malin, Y. V. Vizilter, GosNIIAS, State Research Institute of Aviation Systems (Russian Federation); S.-C. Huang, National Taipei Univ. of Technology (Taiwan); S.-Y. Kuo, National Taiwan Univ. (Taiwan)
- 8791 1M **Identification of bacteria species by using morphological and textural properties of bacterial colonies diffraction patterns** [8791-65]
A. Suchwalko, I. Buzalewicz, H. Podbielska, Wroclaw Univ. of Technology (Poland)
- 8791 1N **Optical-electronic system for express analysis of mineral raw materials dressability by color sorting method** [8791-66]
A. A. Alekhin, A. N. Chertov, E. V. Gorbunova, D. B. Petuhova, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation)
- 8791 1O **Pattern coding strategies for deflectometric measurement systems** [8791-67]
S. Höfer, M. Roschani, Karlsruher Institut für Technologie (Germany); S. Werling, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany)

- 8791 1P **Digital processing of speckle photography to measure refractive index of a transparent plate** [8791-68]
N. A. Moustafa, Helwan Univ. (Egypt)
- 8791 1Q **Technique for positioning moving binocular vision measurement system and data registration with ball target** [8791-69]
F.-F. Gu, H. Zhao, Z. Zhao, L. Zhang, Xi'an Jiaotong Univ. (China)
- 8791 1R **Reduction of the lateral localization error of targets moving through a LIDAR beam** [8791-70]
K. Wenzl, H. Ruser, C. Kargel, Univ. der Bundeswehr München (Germany)

Author Index

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Introduction to Part A: Videometrics, Range Imaging, and Applications XII

The Videometrics, Range Imaging, and Applications XII conference is the fourteenth in a series started in 1991 by Sabry El-Hakim. Under the auspices of SPIE from the beginning, the first conference on Industrial Vision Metrology was held in Winnipeg, Canada. Based on the success of this first venture into an emerging discipline, the conference was renamed Videometrics and held in conjunction with the SPIE Photonics East group of conferences in Boston and Philadelphia during 1992-1995. Videometrics was then re-located to become part of SPIE Photonics West, held annually in California. The conferences were held once in San Diego in 1997, then twice in San Jose in 1999 and 2001 (given the longer title of 'Videometric and Optical Methods for 3D Shape Measurement'), then moved to Santa Clara in 2003 and moved back to San Jose in 2005 and 2007. More recently, Videometrics became part of Optics + Photonics program track on Image and Signal Processing within the Optical Engineering and Applications conferences in San Diego in 2009. The conference was renamed to 'Videometrics, Range Imaging, and Applications' to reflect the changes in contemporary practice.

Throughout all of this period, the attendance from North America was slowly declining, and the participation from Europe and Asia had strengthened, despite the impact of the global financial downturn. Therefore, in 2011, it was decided to move the Videometrics series to Munich, Germany, to be part of the SPIE Europe conference on Optical Metrology, co-located with the World of Photonics conference and exhibition. The general theme of Optical Metrology resonates very well with Videometrics and the majority of authors and presenters from Europe confirmed the correct decision to relocate the conference.

Irrespective of the location, for more than two decades, the Videometrics conference series has been providing a unique forum for optical metrology, computer vision, image processing and photogrammetry researchers and practitioners to present the latest advances in precise 3D measurement and modeling from imaging and range sensors. This conference was originally focused on the metric performance of image sensors and algorithms to produce the most accurate and reliable geometric measurements and models. Topics such as sensor calibration, performance evaluation and accurate object reconstruction were predominant. This has now been expanded to encompass all phases of 3D optical imaging, range imaging and modeling of real scenes, including automation of data collection and processing, improving the visual quality and realism, visualization, animation and data management for real-time manipulation. This is in response to the sustained increase in interest in 3D imaging and modeling technology, and the increased demand of these models in applications such as rapid product development, virtual museums, documentation of monuments and architecture for cultural heritage, marketing and tourism, human body

modeling, medicine, and exploration of remote and hazardous sites, to name just a few.

In 2013, Videometrics, Range Imaging, and Applications XII demonstrates the continuing broad interest in 3D optical imaging, with sessions encompassing all aspects of the field, from performance evaluation to 3D modeling and applications. The two invited speakers reinforce this span of interest, Dr. Robert Godding (AICON 3D Systems, Germany) presenting on optical measurement systems for industrial applications and Prof. Gabriele Guidi (Politecnico di Milano, Italy) presenting on active sensors characterization. Whilst Videometrics embraces new technologies such as enhancing time of flight range imaging and developing new techniques such as in the area of fusion of range and image data, the classical problems of calibration and standards are still well represented. The proceedings of Videometrics always contain something of interest for all practitioners involved in the 3D optical imaging field.

The Chairs recognize and acknowledge with gratitude the efforts of the Conference Committee members, the authors, presenters and audience, and especially the invited speakers, in maintaining the high level of interest in the Videometrics series of events. We acknowledge and appreciate the contribution to the success of the conference from everyone involved in Videometrics.

Fabio Remondino
Mark R. Shortis