2012 International Symposium on Optomechatronic Technologies

(ISOT 2012)

Paris, France 29 – 31 October 2012



IEEE Catalog Number: (ISBN:

CFP1284G-PRT 978-1-4673-2875-3

2012 International Symposium on Optomechatronic Technologies (ISOT)

October 29 – 31, 2012, Paris, France

Koichi Hashimoto, Xiangfeng Fei	Exploration of brain function through behavior, neural activity observation, and optogenetic manipulation	1
Timo Mappes, Tobias Wienhold, Uwe Bog, Christoph Vannahme, Mads Brøkner Christiansen, Anders Kristensen	On-chip integrated lasers for biophotonic applications	8
Sabine Linz-Dittrich, Alexander Schöch, Carlo Bach, Andreas Ettemeyer, Benjamin Hopp and Matthias Andräs	3D Fiber Probe: State of the Art and New Developments	10
Alexia Missoffe, Luc Chassagne, Suat Topsu, Pascal Ruaux, Barthelemy Cagneau and Yasser Alayli	Positioning sensor with nanometric performances over centimetric range for nanotechnology sample-holders	14
Xu Shenghua	Multi-Scale Data Organization and Management of 3D Moving Objects Based on GIS	16
Qingyi Gu, Tadayoshi Aoyama, Takeshi Takaki and Idaku Ishii	Fast Tracking System for Multi-colored Pie-shaped Markers	20
July Galeano Zea, Patrick Sandoz, Guillaume Laurent, Lucas Lopes Lemos and Cédric Clévy	Twin-scale Vernier Micro-Pattern for Visual Measurement of 1D in-plane Absolute Displacements with Increased Range-to-Resolution Ratio	26
Kimimasa Tamura, Kiyoshi Hashimoto and Yoshimitsu Aoki	Accurate Iris and Eyelid Tracking Method for Gaze Estimation without Calibration	32
Yuji Yoshida, Shunta Saito and Yoshimitsu Aoki	Shape Completion and Modeling of 3D Foot Shape While Walking	36
Tatsuki Otsubo, Takanori Yazawa, Keita Fujii, Shinichi Kogusu, Yohei Fukuda, Yasuhiko Ougiya, Tatsuhiro Kojima and Hiroyuki Kisu	Accuracy of Triangulation Method Sensor with Optical Skid	39
Makoto Ginya, Yasuhiro Mizutani, Tetsuo lwata and Yukitoshi Otani	Low-voltage driven method of ferroelectric memory device using optical polarization property	45
Wei Wang, Xiangyu Sun, Stephen Karungaru and Kenji Terada	Face Recognition Algorithm Using Wavelet Decomposition and Support Vector Machines	49
Eberhard Manske	Modular Family of Sensors for a Nanopositioning and Nanomeasuring Machine	55
Marenori Kawamura, Eiji Yumoto and Shunsuke Ishikuro	Three-dimensional imaging system by using a liquid crystal lens	62

Soukeyna Bouchebout, Aude Bolopion, Mohamed Kharboutly, Ioan Alexandru Ivan, Joël Agnus and Stéphane Régnier	Design and first experiments on MagPieR, the magnetic and piezoelectric microrobot	68
Michael Gauthier, Mohamed Kharboutly and Nicolas Chaillet	Robotic control of dielectrophoresis non contact manipulation	70
Erwan Dupont, Frédéric Lamarque and Tanneguy Redarce	Flexible and miniaturized microscope for three dimensionnal measurements	72
Ali Rostami, Ata Taghipour, Manuchehr Bahrami, Hamed Baghban, Hassan Rasooli, Mahboubeh Dolatyari, Farokh Janabi-Sharifi and Xijia Gu	Grating-Based Fiber Bending Sensors with Wide Bending Range	74
Jehhoon Bhang, Seoungrag Lee, Kyoungseop Chang and Youngjun Roh	High speed Tilted white-light Scanning Interferometry system for package bumps inspection	76
Wei-Chih Wang, Alexander Fedorchenko, Cheng-Lin Chang and Zdenek Travnicek	Viscosity measurement using fiber bend loss sensor	80
Dong Liang, Shun\u2019ichi Kaneko, Manabu Hashimoto, Kenji lwata and Xinyue Zhao	Statistical Spatial Multi-Pixel-Pair Model for Object Detection	85
Yasuhiro Takaya, Masaki Michihata, Terutake Hayashi and Taisuke Washitani	Mode Selective Probing Method of Micro Trench Structure Using Optically Trapped Probe	91
Masaki Michihata, Tadaaki Yoshikane, Terutake Hayashi and Yasuhiro Takaya	New technique of single-beam gradient-force laser trapping in air condition	97
Kuk Won Ko, Jae Hwan Sim and Min Young Kim	A High-Speed Whitelight Scanning Interferometer Using On-The-Fly Imaging and Parallel Processing	103
Zeina El Rawashdeh, Frédéric Lamarque, Christine Prelle and Philippe Revel	Modeling and fabrication of conical grating for long-range displacement sensor	107
Deok Hwa Hong and Min Young Kim	An iterative actuator calibration method for accurate phase-shifting in N-bucket phase-shift interferometry	109
Yoshio Hayasaki and Akira Sato	Holographic position measurement of nanoparticles trapped with optical tweezers	114
Michael Pauls, Jens Brunne, Ulrike Wallrabe and Rüdiger Grunwald	A reflective tunable blazed-grating for high energy femtosecond laser pulses	116
Jens Brunne, Matthias Wapler, Ulrike Wallrabe, Alexander Treffer, Martin Bock and Rüdiger Grunwald	Adaptive Fresnel mirror for ultrashort-pulse laser beam shaping	118
Shuichi Akizuki and Manabu Hashimoto	High-speed and Reliable Object Recognition Using Distinctive 3-D Vector-Pairs in a Range Image	120
Kosuke Takahashi, Takayuki Tanaka, Hiroyuki Nara, Shun'Ichi Kaneko, Masao Inoue, Shunji Shimizu and Satoru Kojima	A Modeling of Cerebral Blood Flow Changes due to Head Motion for fNIRS	126

Jae-Hee Kim, Jae-Cheol Lee and You-Rack Choi	Vision based Pipe Grasping Scheme for a Pole Climbing Robot	133
Aleksandar Vakanski, Farrokh Janabi-Sharifi and Iraj Mantegh	Transferring Skills to Robots for Tasks with Cyclic Motions via Dynamical Systems Approach	135
Sang Woo Bae and Min Young Kim	A parallel mode confocal system using micro-lens and pinhole array in dual microscope configuration	141
Akbar Assa and Farrokh Janabi-Sharifi	A Pre-Processing Data Fusion Scheme with Application to Multi-Camera Pose Estimation	145
Hiroyuki Ishihara, Kengo Yoshioka and Makoto Hirose	Proposal on Image Compression Method using Synchronization	151
Chia-Lun Ku, Hsun-Yuan Li, Ming-Shu Chang and Wen-Hsin Hsieh	μ-TAS for label-free biosensing with double-sided grating waveguide.	153
Wei-Chih Wang and Chu-Yu Huang	A Fourier Transform Spectrometer based on	155
Wei-Chih Wang and Feng-Ju Hsieh	Effective Material Properties Extraction Method for An Asymmetric Metamaterial with Uneven Distances to Two Measurement Ports	159
Ruven Spannagel, Thilo Schuldt, Martin Gohlke, Johannes Delion, Ulrich Johann, Dennis Weise and Claus Braxmaier	Optical Metrology to Determine Thermal Expansions of Ultra Stable Materials Used in Space Applications	163
Koichiro Enomoto, Masashi Toda and Yasuhiro Kuwahara	Bottom Sediment Classification Method from Seabed Image for Automatic Counting System of Scallop	165
Hanno Dierke, Marc Fischer, Alaa-Eldin Abd- Elmageed and Rainer Tutsch	Detection of the displacement of micro touch probes using structured illumination	171
David Diego-Vallejo, David Ashkenasi and Hans Joachim Eichler	Inspection of thin-film solar cell processing by laser-induced breakdown spectroscopy and neural networks	179
Takanori Yazawa, Youichi Nishiguchi, Tsuyoshi Soejima, Megumu Kuroiwa, Tatsuki Otsubo, Yasuhiko Ougiya and Tatsuhiro	Study on High-Speed Contactless 3D Measurement for Tooth Plaster Model	181
Kojima Seungtaek Kim, Kyungyoung Cho, Hyungtae Kim, Jongseok Kim and Youngjune Cho	The effects of CCM and PWM on chromaticity and spectrum of PC white LEDs	183
Marcus Baumgart and Andreas Tortschanoff	Theoretical Aspects and Derived Design Rules for Optical Angle Position Sensing of Tilt Mirrors	189
Christian Dahmen, Huiquan Wang, Bernd Zeischke, Honghao Wang, Zhonghe Jin and Sergej Fatikow	Superresolution on Pico- Satellites using Object Tracking	195
Masataka Saito and Manabu Hashimoto	Robust Image Matching for Irregular Illumination Variation based on Spatio-Temporal Analysis of Image Intensity	198

Christian Dahmen	Robust tracking of motion-distorted objects using active models	204
Catachi Hasayawa and Vashia Hawasaki		
Satoshi Hasegawa and Yoshio Hayasaki	Holographic femtosecond laser processing with wavelength dispersion compensation	210
Claudio Perez, Jacob Saravia, Carlos Navarro, Luis Castillo, Daniel Schulz and Carlos Aravena	Lithological classification based on Gabor texture image analysis	212
Ichiro Ishimaru and Akira Nishiyama	Quantitative Spectroscopic-tomography of Biological Membrane for the Non-invasive Blood Glucose Sensor	215
Hyungtae Kim, Seungtaek Kim and Youngjune Cho	A review of the light intensity control and quick optimum search in machine vision	222
Hyungtae Kim, Seungtaek Kim and Jongseok Kim	A review of the mixed-color illumination and quick optimum search in machine vision	228
Yuki Nagata, Yasuhiro Mizutani, Tetsuo lwata and Yukitoshi Otani	Photothermal imaging for single nanoparticle using near- common path interferometer	234
Benjamin Mertens, Benjamin De Leener, Charles Beumier, Olivier Debeir, Pierre Lambert and Alain Delchambre	Robust Structured Light Pattern for Use with a Hologram in 3D Endoscopy	238
Joel Kubby, Oscar Azucena and Xiaodong Tao	Adaptive Optics for Biological Imaging using Direct Wavefront Sensing	244
Yuichi Kanamori and Yukitoshi Otani	Driving droplet by photo-thermal Marangoni convection	246
Yui Satake, Yukitoshi Otani and Isamu Maeda	Photosynthetic fuel cell using purple non-sulfur bacteria	248
Shuhei Shibata, Takashi Onuma and Yukitoshi Otani	Realtime birefringence mapping by polarization camera	251
Christian Dahmen, Bernd Zeischke, Christian Geldmann, Alexander Kluge and Sergej Fatikow	Threedimensional actuation of small ferromagnetic objects in MRI	253
Johan Kruis, Yves Bellouard, Olivier Chappuis and Reymond Clavel	Design of a miniature laser scanning head for high- bandwidth, low-amplitude beam steering	255
Jean-Marc Breguet, Simon Henein, Ivar Kjelberg, Mathias Gumy, Wayne Glettig, Steve Lecomte, Dmitri Boiko and Valentin Mitev	Tunable Extended-cavity Diode Laser based on a novel flexure-mechanism	257
loan Alexandru Ivan, Mihai Ardeleanu and Guillaume J. Laurent	High dynamics and precision optical measurement using PSD (position sensitive detector) in reflection-mode. Application to a 2D object tracking over a smart surface.	263
Carlas Smith, Raluca Marinica, Jacopo Antonello, Arnold Den Dekker and Michel Verhaegen	Focal-plane wavefront estimation and control using the extended Kalman filter	265

Antoine Ferreira, David Folio and Karim Belharet	Untethered Microrobot Control in Fluidic Environment using Magnetic Gradients	271
Nabeel Riza and Muhammad Junaid Amin	I-WMOSS: Interferometric Wavelength Multiplexed Optical Scanning Sensor	276
Mahmut Selman Sakar, Simone Schurle, Sandro Erni, Franziska Ullrich, Juho Pokki, Dominic Frutiger, Olgac Ergeneman, Bradley E. Kratochvil and Bradley Nelson	Non-contact magnetic in vivo manipulation of microstructures	280
Edouard Leroy and Moustapha Hafez	Ultrasonic spherical motor for compact inertially stabilized platforms	282
Alexander Jesacher and Monika Ritsch-Marte	Multi-focal light microscopy using liquid crystal spatial light modulators	287
John Girkin	Active Optical Methods for in vivo Imaging in Developing Zebrafish	289
Pui Lam Ho and Yeung Yam	Computational Design and Prototype Development of Optical Prism for Augmented Reality Projection	291
Tristan Colomb and Yves Emery	Digital holographic reflectometry for semi-transparent multilayers measurement	295